38

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Fosberg Micronesian no.

24285

Collection and Field Note Book

No. 38

(December 29, 1953 - February 3, 1954)

(35324 - 35676)

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1953 - Guam

Dec. 29 - Lost River Guaging Station, U.S.G.S.

Karst topography with flat-bottomed valleys - river flood plains.

On these flood plains are open grassy ~~areas~~ areas, dominated by Paspalum conjugatum. Whether these are natural or not is hard to tell, but seems unlikely. There ~~are~~ are Musa, Cordyline (red leafed form), and what seems to be the cultivated Artocarpus common enough too, as well as Alocasia, Muntingia, Leucaena, Cestrum, and other indicators of disturbance.

The forest on the limestone contains

c Cananga odorata
c Pandanus tectorius
+ Pandanus dubius
e Cycas circinalis
e Ficus retusa
c Dysoxylum mariannense
e Pisonia grandis
c Hibiscus tiliaceus
e Artocarpus altilis (cult. fund)
c Musa sapientum

1953 Guam

c Cerbera dimorpha
c Tiphasia trifolia
c Alocasia macrorhiza
o Morinda citrifolia
o Intsia bijuga
o Muntingia calabura
c Piper guahamense
o Freycinetia torresiana
o Caesalpinia
c Tectaria crenulata
c Polypodium punctatum

Dec. 30 - Tutujan, Agaña
Cultivated plants around house of Dr. Liming U.S.D.A. entomologist:
Hibiscus mutabilis
Sansevieria roxburghiana
Nephrolepis hirsutula
Gomphrena globosa
Canna (hybrid)
Hibiscus (hybrids)
Caladium bicolor
Cordyline terminalis
Psidium guajava
Gossypium Barbadense
Cucurbita pepo
Barleria cristata (Thompson flora)
Tabernaemontana coronaria
Cocos nucifera
Solanum lycopersicum
Plumeria rubra
Lactuca sativa
Phaseolus lunatus
Cucumis sativa

Citrullus vulgaris
Carica papaya
Pedilanthus tithymaloides
Raphanus sativus
Allium cepa
Psophocarpus tetragonolobus
Solandra guttata
Solanum melongena
Capsicum frutescens
Hibiscus sabdariffa
Trunkia?
Hedychium coronarium
Alocasia macrorhiza
Musa nana
Zephyranthes rosea
Heterospathe elata
Manihot esculenta
Musa sapientum
Bauhinia sp.
Bougainvillea spectabilis
(w fl., glab. with br
Scindapsus aureus
Polypodium scolopendria
Polypodium punctatum
Asplenium nidus
Clerodendrum speciosissimum
Cia

1953 Guam

Dec. 30 - Lower Fonte River
Deep shaded ravine, alluvial soil.

35324 Angiopteris evecta
single plant seen, almost washed loose from side of lowest trench of ravine

5 25 Bambusa vulgaris ~~Schrad.~~ Schrad. ex Wendl.
~~dense clumps, culms~~
· Common on sides and terraces of ravine

det. McClure

dense clumps, culms originating close together, erect, somewhat arching outward, dark green, up to about 8 cm. thick, internodes up to 3 dm. long, culms to 10-15 m. tall.

Dec. 30 about 3 km s. of Agat, ~~just at~~ (old bridge)

5 26 Pahicum
common on flat just back of beach near stream

5 m.

stem barrel-shaped, ponds stipulate. 2.5 m. long.

Dec. 30 - ridge s. of Mt. Lamlam
degraded forest on limestone

385 m.

7 27 Mucuna
common in brushy places

extensive tangled vine; flowers pendent, pale green, hairs on calyces irritating.

6 28

occasional in brushy vegetation

shrub 2 m. tall; ~~leaf~~ leaves very rugose; flowers green, fruiting inflorescence yellowish, slightly fleshy.

2 m.

decumbent

1953 Guam

35339 Pisonia cauliflora
15 rare in broken-down forest

L 30 Tarenna
rare in forest

S 31 Maesa
rare in forest

+ 32 Ficus prolixa
common in forest

S 33 Ficus prolixa
common in forest

1 34 Humata heterophylla
epiphytic on Ficus branches

1 35 Vittaria
epiphytic on Ficus branches

1 36 Peperomia
epiphytic on Ficus branches, rare

old tree almost
smothered by strangling
fig; inflorescences
at lower nodes on
branches as well as
terminally, flowers
pinkish; fruit not
quite mature. (note
rolled up leaves in seed).
— tree 15 cm. diam., 8 m. tall,
fruit immature;
leaves tending to be
somewhat rolled.
— shrub 1.5 m. tall;
flowers pinkish white.
banyan type tree,
long spreading branches
branches supported by
aerial roots; figs
dark purple when ripe.
— (possibly same tree as #35339)
banyan type tree; figs
dark purple when ripe;
stipules elongate, covered ca.
only on very fast growing
branchlets. (7 to midribs Mem.)
fronds glossy.

pendent

Glochy

1953 Guam

Dec. 30 - Base of Orote Peninsula abandoned cultivated ground, broken thickets and marshes.

35>37 Fairena
edge of Eleocharis marsh, locally abundant

c 38 Polygonum
locally abundant in marshy spot.

> 39 Pyrrosia lanceolata
epiphytic on coconut trunk

culms erect

stems decumbent, ascending distally; flowers white

3a fronds fleshy.

1954 Guam

Jan. 1 - Tutujan, ±5 ft. Cagayan
cultivated

35 340 Luffa
climbing on fence

1 41 Hibiscus esculentus
in garden

Jan 2 - north of Wettengel
junction
cleared ground on limestone

4 42 Crotalaria mucronata Desv.
small colony near road

4 43 Pennisetum
abundant.

Jan. 2 - 2 km inland from
Hilaan Point

1 44 Digitaria insularis
rare in open field

Jan. 2. - Tamuning
cultivated in garden

1 45 Gaillardia ~~pict~~ pulchella Foug.

1 46 Aster novi-belgii L.

1 47 Malpighia coccigera

1 48 Duranta repens

Ft. Soto

extensive vine, flowers bright lemon yellow, fruit elongate, angled

herb 1.4 m. tall, much branched, almost leafless at this season, hairs in inflorescence irritating, calyx in fruit purplish red, fleshy.

erect herb 1 m. tall, branched, flowers yellow with brown line. forming tangles 2 - 2.5 m tall.

1.1 m.

~~small tree~~ ~~capsules~~, culm erect.

1.5 m.

- rays red with yellow tips
- rays ~~pink~~ lavender,
- disks yellow, turning reddish.

shrub 1 m. tall, leaves

- glossy.

shrub 1.5 m. tall,
fruit immature.

1954 Jan.

35 349 Chrysanthemum maifolium ?

1 50 Chrysanthemum maifolium
1 51 Pseudoranthemum lucida (Schr.) Radlk

1 52 Asparagus plumosus
1 53 Coreopsis tinctoria Nutt.?

2 54 Plumbago auriculata

1 55 Angelonia

1 56 Rosa

Jan. 2 Trail to Tweed's Cove, Hopeto.

10 Terrace at base of cliffs in ravine, tall moist forest.

1 57 Dioscorea sans

4 57 dominant tree in forest, seedlings abundant in shade.

low herb, flowers light yellow.
— low herb, rays pinkish.
shrub 1 m tall, leaves deep bronze purple, flowers white with red dots in lobe, especially near throat.
— low herb.
low herb, rays deep brownish red, with yellow tips.
— low herb, flowers pale dull blue.
— low herb, flowers deep violet.
— low shrub, flowers deep crimson.

shrub 1 m tall.
— fruit immature
tree 40 m. tall, stones and seedlings picked up on ground beneath tree.

1954 Guam

Jan. 2 - Tweed's Cave
Nr. Agat
limestone cliffs

35359 Ficus prolixa
4 common on bare limestone

4 60 = Ficus prolixa
bare limestone

4 61 Ficus prolixa
bare limestone

The actual cliffs here are covered by Ficus prolixa (which is in several forms, with, Pandanus dubius quite abundant. Glochidion, Pipturus argenteus, Hibiscus, etc. with abundant Nectaria crenata and Procris pedunculata (which does form sort of a vinelike habit at times, and has rose colored fruits).

Below the cliffs on the shelf between 10 and 20 m. is a rather open coconut grove on a small part with some soil. On the greater part which is very rocky (small karstfield) is a

90 m

shrub or small tree, aerial roots spreading over rock surface.
shrub, old leaves gone, new ones just emerging; roots spreading over rocks. new leaves just expanded, aerial roots spreading over rocks.

magnificent tall forest, not measured but estimated at 30-45 m., dominated by #35758, and Ficus prolixa, the latter less abundant but taller. Elaeocarpus habit very conspicuous. second story in the forest about 4 m. tall, of saplings of #35758, and a lower story of 1 m. tall of seedlings of the same species. seems to be completely tolerant of shade - seedlings and saplings very healthy.
Several large clumps of Bambusa.

1954 Guam

The forest on the slope up to the plateau is largely Artocarpus Triphlebia Aglaia, Guamia, Cyas. Morinda, Premna, etc.
Forest on top, where still existing, is largely Artocarpus and Pandanus.

35962 Jan. 7 – Tamuning

cultivated in pot in shade

Jan. 3 – top of Mt. Lamlam

decadent moist forest on limestone

4 63

locally common

2 64 Urtica

common

6 65 Morinda umbellata v. glandulosa occasional (rare) Fruit

Jan. 5 – top of flat topped erosion remnant ~~on~~ 5 km. east of ~~Yigo~~ Bay Yigo

(5) 66 Arthropogon fragilis Ridley

common in grassy vegetation on heavy red soil

15 m.

prostrate, leaves flat on ground, dark purplish green with light green along veins, very rugose, scallop bright crimson.

400 m.

sterile tree 10 m. tall, 3 dm. thick (same as #35962) shrub 2 m. tall, leaves white beneath, fingers above mine climbing in Dec.

160

shrub

1954 Guam

Jan. 3 - Mt. Lamlam - summit plateau. Dissected limestone beds.

This plateau is karst-like in topography, with sharp peaks here and there, the limestone very rough.

The vegetation is a degraded forest, much resembling that on the northern plateau but practically lacking Artocarpus and with a little Areca. That it is secondary in nature is well shown by the abundance of Hibiscus tiliaceus, which forms a "background" throughout the part of the area examined.

Practically all large trees show the effects of typhoons in dead tops and upper branches and a general ragged appearance.

The whole aspect of the forest is low and tangled. Its height varies from 2-3 m. on the high points to perhaps 15 m. in sheltered depressions. Larger trees stand out here and there, up to 15 or more m.

Composition is, roughly,

a Hibiscus tiliaceus
a Ficus prolixa
a Ipomoea indica
a Mucuna gigantea
c Macaranga thompsonii
c Aglaia mariannensis
c Pandanus dubius
c Pandanus tectorius
c Areca catechu
la Cycas circinalis
la Freycinetia torresiana
la Alocasia macrorhiza
c Piper guahamense
c Nephrolepis hirsutula
c Davallia solida
c Polypodium pumilatum
o Fagraea berteriana
o Ficus tinctoria
o Guamia mariannae
o Pipturus argenteus
c Premna obtusifolia
o Triphasia trifolia
o Elaeocarpus joga
o Guettarda speciosa
o Procris pedunculata
o Medinilla rosea
o Psidium guajava
^ Artocarpus altilis
^ Pouteria
^ Leucaena glauca
o Morinda citrifolia

1954 Guam

r Mariscus

In open places, clearings, roadsides, etc.

a Paspalum conjugatum
c Chloris inflata
c Cenchrus echinata
~~Rhoplanthorus~~
c Conyza bonariensis
cc Dryopteris unitum(?)
c Pilea microphylla
dc Phyllanthus mariannensis
cc Miscanthus floridulus (limestone ledges)
one clump in open on flat and common on bare limestone ledges.
c Lestrum diurnum
r Hyptis capitata
r Cynodon dactylon
r Fleurya ruderalis

In cleared places Piper graboense persists even in open, but the leaves tend to become bullate - rugose when growing in sun.

To the east of the main ridge on this plateau and at a somewhat lower elevation there is what appears to be an area of marsh, some acres.

Jan. 7 Jumulong Manglo

Volcanic peak, very sharply set off from limestone to north.

Mosaic of Miscanthus and Dimeria communities. Some indication here of actual invasion of Dimeria communities by Miscanthus - in form of numerous small tufts of Miscanthus in what otherwise appears to be a pure Dimeria stand.

Composition of Dimeria community:

a Dimeria chloridiformis
la Miscanthus floridulus
c Elephantopus mollis
c Hedyotis megacarpa
c Lycopodium cernuum
c Phyllanthus saffordii
o Hyptis capitata
r Myrtella benigniana
r Wikstroemia elliptica
r Decaspermum fruticosum

Bare erosion area:

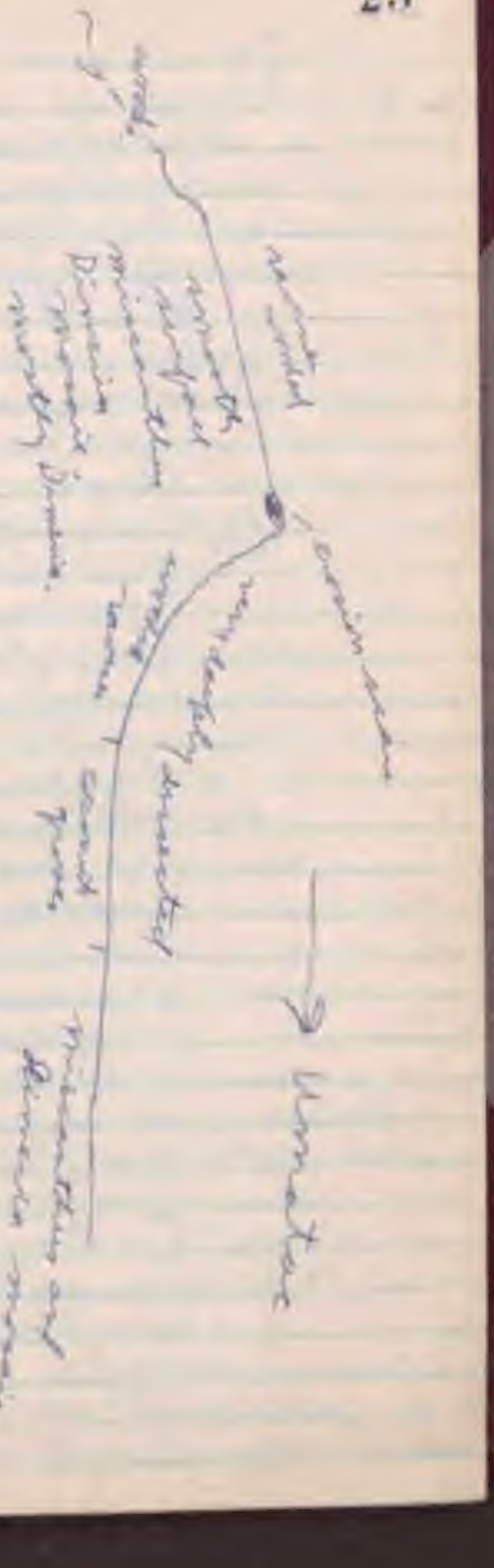
c Blechnum orientale
c Sterculia
o Phyllanthus saffordii
o Chrysopogon aciculatus

1954

In the Miscanthus community the dominance of Miscanthus is such that only in small openings are other plants commonly seen. The Miscanthus reaches 2 m. in height and is difficult to walk thru

a Miscanthus floridulus
c Chrysopogon aciculatus
o Wahlstroemia elliptica
v Elephantopus mollis.
o Ageratum conyzoides
o Dimeria chloridiformis
o Phyllanthus sp. Elfordii
o Blechnum orientale
o Melastoma malabathricum
or Athyrium sp.
n Lygodium scandens

To the south of this is a ridge, examined only at a distance, which on its southwest slope is very steep, and deeply dissected by headward erosion. The other side is a gently sloping rather smooth surface. Into this are cut a few shallow dendritic ravines.


Miscanthus floridulus
Chrysopogon aciculatus
Wahlstroemia elliptica
Elephantopus mollis
Dimeria chloridiformis
Phyllanthus sp. Elfordii
Blechnum orientale
Melastoma malabathricum
Athyrium sp.
Lygodium scandens
Sand
Sand
Miscanthus and Dimeria mix
Unmatured
Unmatured
Unmatured

1954 Guam

Jan. 5 – 2.9 km. e. of Apra Heights.

Old lava flow, much weathered. Vegetation very broken over.

Plants growing on this material:

a Gleichenia linearis
a Dimeria chloridiformis
la Miscanthus floridulus
la Scleria sp. large
la Lindsaya ensiformis
c, la Myrtella benigseniana
c Wikstroemia elliptica
c Geniostoma
c Rhynchospora aurea Gaudichaud
c Rhynchospora
(small, open infl.)
c Hyptis capitata
c, la Melastoma malabathricum
c Chrysopogon aciculatus
c Elephantopus mollis
c Casuarina equisetifolia
sc Pianella
o Phyllanthus saffordii
o Scaevola frutescens
o Morinda citrifolia
o Waltheria indica
r Blechnum orientale
r Pouteria
r Cassytha filiformis
r Cheilanthes tenuifolia

This is surrounded by flat and rolling ground, with almost

solid Dimeria, here and there a patch of Miscanthus, and in low wet spots, solid stands of Phragmites.

Ravine forest in vicinity.

Jan. 5 3 km. e. of Apra Hts.

Small remnant, but on red soil – surface soil bleached, merely a knob remaining.

Composition of vegetation:

a Miscanthus floridulus
la Mitracarpus hirtus
la Elephantopus mollis
c Dimeria chloridiformis
c Hyptis capitata
c Centella asiatica
c Ageratum conyzoides
c Chrysopogon aciculatus
c Leptochloa cynodon
c Scaevola frutescens
c Sesuvium
c Gleichenia linearis
o Casuarina equisetifolia
(large on edge of steep slope)
sc Heteropogon contortus
o Wikstroemia elliptica
o Melastoma malabathricum
r Zanichellia sp.
r Scleria (small) (under Casuarina)
r Cheilanthes tenuifolia
r Gleichenia dichotoma

1954 Guam

r Euphorbia serrulata?
r Hyptis capitata
r Dianella
r Ipomoea (small purple)
r Casuarina filiformis

Small bit of ravine forest to south, examined only from distance.

(Artocarpus altilis
(Pandanus tectorius
dominant (Areca catheca
Ficus prolixa?

Jan. 5 6 km. se. of Pago Bay fairly large flat-topped remnant a mesita, south of road.

Main vegetation on top is a mixture of Miscanthus and Dimeria - obviously rather disturbed.

a Miscanthus floridulus
a Dimeria chloridiformis
a Chrysopogon aciculatus
la Mitracalpum hirtum
a Stachytapheta indica
c Scaevola frutescens (on scarp)
c Gleichenia linearis on scarp
c Elaphantopus mollis
c Andropogon fragilis?
o Hyptis capitata
o Casuarina equisetifolia (older ones around edge, a few seedlings on flat)

o Wikstroemia elliptica
o Waltheria indica
o Fimbristylis sp.
o Geniostoma
o Ageratum conyzoides
o Morinda citrifolia (on scarp)
o Cucumis orbiculata?
r Myrtella benigniana
r Glochidion mariannense

Between these mesitas there are rather conspicuous flat or very nearly flat areas at somewhat lower elevation. These surfaces might be mistaken for the same surface as that of the mesita. It apparently results from a type of erosion which, eating into the mesita laterally, removes a sheet a few m. thick, leaving an almost flat residual surface. This may possibly be the way the regional flat red deeply weathered surface became flat. Apparently some of the saprolastic materials, possibly only the loose, weather very deeply to form ~~a sheet of~~ clay that ~~weathers to~~ erode

in this manner regardless of the bedding or other orientation of the original material. This erosion also seems to expose ~~stone~~ clay surfaces in the seals that tend somewhat to resist revegetation. The material removed in the erosion may go, at least in part, to make up the lens-shaped bodies of bedded red fine material found so commonly here. If so, then this bedded material may well date from the Tibre clay weathering stage right up to the present time.

The oldest cannaimas in any of this region, not large, but rather rounded and mound-like up to 2(-3) dm. thick, 9-10 m. tall, are generally found on the ledges of the mesitas. They may well date to before the war. They are probably protected from fire by the steepness and barren

of the eroding sides of the mesitas and scarp surrounding them. They probably provided the seeds for the abundant crop of saplings that covered scattered over the entire country here on the volcanics (where they have not been destroyed by fire).

The ground beneath these cannaimas is covered by a layer of dead "needles" and seems to rather resist revegetation. Selaria (small) seems to prefer the habitat and Bumelia and several other grasses and sedges are able to invade it, but more slowly than in bare soil.

1954 Guam
Chalandas

Jan. 6 – Mt. 1 km. s.e. of Jumulong Manglo Mt. Gently rolling ~~valley~~ slope of deeply weathered volcanic material.

35367 Selaginella ciliaris (Retz) Spr. vertical bank of large erosion scar, with spores.

5 67 Dimeria ornithopoda vertical bank of large erosion scar

1 69 Wedelia biflora var. canescens occasional on erosion scar

4 70 Stenoloma common on erosion scars.

2 71 Dryopteris maemonensis. Edge of patch of woods in ravine.

10 72 Cyathea lunulata occasional in ~~bed~~ heads of ravines in patches of woods

3 73 Hedyotis megalantha Man. common in grassland near edge of woods

5 74 Oplismenus imbecilis competing ground in edges of patch of woods in ravine

1 75 Centotheca lappacea occasional in edge of patch of woods in ravine

5 76 Antrophyum plantagineum (Haenke) Kaulf. epiphytic on tree trunk in wooded ravine.

325 m

prostrate, leaves gray-green; heads yellow. fronds coriaceous.

erect trunks 1 m. tall (others up to 4 m.), about 7 cm. diam. leaves up to ~~1.5~~ 1.5 m. long. small shrub, up to 1 m. tall; fls. white.

prostrate.

culm erect

blades ending downward, leathery.

3937.7 Peperomia
2 epiphytic in knot hole
of tree trunk in wooded ravine.

3 78 Pavonia Strumifolia A. St. (Obtusifolia Hbs.)
seeding tree in
wooded ravine

3 79 Melochia
common around edges
of patches of woods in ravine

79a Physalanthus saffordii
common around edges of patches of woods in ravine

4 80 Jan. 6 Mt. Jumuffong Mango
Digitaria pruriens on prairie but
patch around old approaching
installation on summit.

Jan. 7 - 3 mi. north of Wetlengel Junction
low place on ~~rolling~~ limestone soil

4 81 Bottbroellia Tripsacum Latifolium Hitch.
large patch, not seen
elsewhere.

Jan. 7 - Northwest Field
decadent forest on
limestone plateau.

7 82 Erigeron annuus
local colony on roadside

83 Hedyotis
along roadside

leaves fleshy

medium tree, leaves
and flowers aromatic,
flower pale green.
shrub 2m. tall,
leaves with a
frosty appearance;
flowers magenta.

390 m. tangled decumbent to
ascending culms.
on. riverbank

1½ m.

1-1.5m. tall, from
creeping superficial
rhizomes.

1950.

1.5 m. caespitose,
stems erect from large
clumps of rosette leaves.
1.5 m. flowers white

35 36 4 Operculina
8 around edges of forest

4 85 Colubrina asiatica
edge of forest

6 86 Leptaena reperis
along sides of road
and in edge of forest

2 87 Ipomoea indica
along roadside

1 88 Ipomoea indica
along roadside

6 89 Cladrastylon
edge of forest

2 90 Eugenia javanica
in secondary forest

11/7 m. tremendous wind,
blanketing trees and
shrubs, flowers shot
out then spirally coiled.

15 m. tangled scandent
shrub, flowers yellow-green,
4 — fruits immature.
forming a continuous
loose mat.

twiner, flowers
purple, fading in
late afternoon.
extreme leaf variation
small tree, 10 m. tall.

small tree. ~~flowers~~

1954 Guam

Jan. 7 - Anderson Field
In base nursery, cultivated

? 5371 Catalpa longissima
× 92 Albizzia
4 43 Phaseolus lunatus
× 94 Pseuderanthemum carruthersii var. carruthersii
× 95 Pseuderanthemum carruthersii var. atropurpureum (Bull) Fosb
× 96 Morus
1 97 Alpinia s

Jan. 7 Ngigs
~~Guam~~ cultivated in garden of Manuel Calvo
1 98 Zephyranthes candida
border plant
1 99 Polyscias
1 3540 Asparagus sprengeri
Frost plant
1 01 Coffea labaica

160 m.

flower white.
climbing on trellis,
flowers white.
— leaves green, flowers white with red dots in throat.
leaves deep maroon beneath, orange green above, flowers deep pink with numerous red dots on upper side of limb.
— leaves very young; caespitose, corm 1.5 m. tall, calyx and corolla white tipped with rose; stamens red with yellow margin.

170 m.

flowers white.
shrub 1 m. tall, aromatic.
caespitose, stems arching; flowers white.
— tree 2 m. tall, only 4 years old, fruit green.

1954 June

35402 Diospyros discolor
2 ~~tree to 8 m. tall~~

1 03 Cupressus

1 04 Maranta arundinacea
1 05 Manihot glaziovii M.A
2 06 Pterocarpus indicus

07

Jan. 7 Between Wettengel Junction and Ojigo

1 07 Trimeria ~~sp.~~ ~~nov.~~ ~~sp.~~ ~~nov.~~ ~~sp.~~ ~~nov.~~

1954 Guam

Jan. 8 - 3½ miles s. of Agat

weedy edge of dump

35409 Malachra
1
5 10 luffa cylindrica
large patch

Chalandao

Jan. 6 - Mountain 1 km.
s.e. of Jumayong Mangle
(see p. 1 v 2 & 3)

This is a gently sloping rolling relatively level top, grassy except for large tan areas and shallow ravines eating into it from the lower edge.

These ravines have patches of low woods, usually connected with larger patches or areas of woods below.

The scattered Melochia bushes around the edges of these patches

100

erect plant with stinging hairs; flowers yellow. extensive crawling vine, loosely covering ground; corollas yellow, very readily caducous. fruit round in section, very warty, eaten when green. "vines cooked and eaten, but rather bitter. "almagosa"

suggest that the original habitat of Melochia hirsuta Forsk. & was been around the borders between woods and savanna.

Composition of fruit (in upper ends of ravines)
Tree layer (individuals)
a Pandanus tectorius
a Guamia calliana
b Hibiscus tiliaceus
c Ficus prolixa
c " tinctoria
c Guettarda speciosa (edge)
c Erythrina fusca
c Premna obtusifolia
c Musa (edge)
c Morinda citrifolia
c Melochia

1954 Guam

c Dicranopteris linearis
c Gleichenia dichotoma and Sambucus
c Freycinetia barbata
o Medinilla rosea
o Hypolepis scandens
o Polypodium pectinatum
c Davallia solida

Herb layer.

c Nephrolepis biserrata
c Selaria (sage)
r Angiopteris evecta
o Centotheca lappacea
la Ophiomeris umbrosa
c Alocasia macrorrhiza

Some reed patches in ravines between patches of forest.

The cycads occur principally as scattered individuals in the edges of the upper parts of the ravines. About 10-12 individuals were seen in about 4 ravines.

Grass communities on level to rolling areas. Dimeria chlorodiffusis is dominant on most of the more level flats. Miscanthus is invading actively in some places.

than not, as shown by an abundance of young plants scattered irregularly in the Dimeria communities. On slopes, ravines, etc. Miscanthus is dominant and even exclusive.

Secondary species, locally worthy in both communities:

la Gleichenia linearis
la,c Elephantopus mollis
c Lycopodium cernuum
c Hedyotis megalantha
c Melastoma malabathricum
c Elmerrillia tsiampaca
c Hyptis capitata
c Phyllanthus saffordii
la-c Lindsaya orbiformis
lc Mitracarpum hirtum
lc Emilia sonchifolia
lc Rhynchospora corymbosa
lc,o Centella asiatica
lc Andropogon fragilis
o Gleichenia linearis
o Dianella
r Vitex parviflora
r Stachytarpheta indica
r Myrtella semiserrata
l Ophiomeris umbrosa
l Selaginella ciliaris

(cont'd p. 70)

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Erosion scars in this area are mostly at and just back of the crest, sometimes actually draining to the uphill side through saw notches. They are cut into weathered fine tuffaceous material. They are typically nearly to absolutely flat bottomed, actually appearing to be artificially levelled in some cases.

~~In places~~ They have evidently been scoured out by wind as well as water. Usually the bottoms are completely without plants.

In places material washed from the sides of the scars spreads itself out over the flat places or in depressions in the hard cliffy fine beds. These tend to build them up slowly or at least to maintain a level.

Jan 7 - Yigo

called on Manuel LeCot, conservancy of Yigo and local gardener. Asked various questions and discussed place of ~~set~~ aside as conservation reserve.

He suggests the area south of Anao P.C. and Anderson Field and east of Yigo, east of the end of private property - east of Perez property (CT 7098), Blas property, south to the 7100 plot, 7093 plot, and 7092 plot. This is reasonably good woods, and protected on 2 sides by ocean and airport land. Property owners are favorably disposed. Contains roosting places of fruit bats

LeCot says that in former times the natives made sweet potatoes bear better by beating the vines with sticks to injure them.

They also discovered that young trees can be made to blossom by scorching them several

1944 J

times in separate days
This was apparently
caused by observing
behavior of trees around
cook houses etc. where
there is much smoke.

When cook houses are
abandoned trees usually
do not bear the next
year.

Calos said that when
he was younger, a
cook house had been
out of use for 10 years.
Mango trees which
had borne well before
did not bear much
during the ten years
but started again
when cook house
was used again.

Smoking for mosquitos
is very common. Sometimes
smudge fires are built
under houses elevated
on pilings. Pago (Hibiscus
tiliaceus) usually used,
an old log 10 feet long
will burn very slowly,
making smoke for
10 days or so.

Calos says that
20-30 years ago there
was much clearing

between Agana and
Sigua, some clearing
planted to coconuts,
some to other crops,
then abandoned and
grown up to forest
of trees perhaps 2-3 dm.
thick.

Also in former times
there was much logging
for ifil, apgo pounds
dangalug and fogo. Trees
were removed up to
500' from the roads on
smooth ground. Some
of the old wood roads
were built — for this
purpose.

He remembers
planting of teak trees
in 1923. They are now
about 5 dm. in diam.

"paifai" (Pterocarpus) wood
is used for fencing handles.

"aluem" (Melanolepis) wood
is used for slow carts.

"ladot" (Morinda citrifolia)
wood used for rafters.

Plants cultivated
in Calos's garden:
Mopalea cochinellifera
Delonix regia
Persea americana
Bauhinia variegata

1954 Guam

Catharanthus roseus
Codiaeum variegatum
Vanda (Miss) Joaquim
Allamanda cathartica
var. hendersonii
Bougainvillea spectabilis
Hibiscus hybrids
Plumeria rubra
Citrus sinensis
Caesalpinia pulcherrima
Acanthus ilicifolius
Quamoclit coccinea
Jatropha pandurifolia
Dieffenbachia maculata
Araucaria excelsa
Scaevola frutescens
Mangifera indica
Canna hybrids
Antigonon leptopus
Diospyros discolor
Epipremnum ?
Asparagus sprengeri
Asparagus plumosus
Clematis ?
Tabernaemontana divaricata
Beaucarnea recurvata
Cordyline terminalis
Rosa sp.
Cassia javanica
Nerium oleander
Yucca sp.
Euphorbia sp.
Coffea liberica
Punica granatum

Jasminum tortuosum
Citrus medica (lime)
Begonia sp.
Polianthes tuberosa
Jatropha multifida
Hedychium coronarium
Caladium bicolor
Hedychium coronarium
Hedychium flavum
Psidium guajava
Pyrostegia venusta
Polyscias scutellaria
Ipomoea aquatica
Cocos
Curcuma domestica
(Tonga pink)
Alocasia macrorrhiza
Musa paradisiaca
Musa sapientum
Maranta arundinacea
Carica papaya
Terminalia catappa
Xanthosoma sagittifolium
Monstera deliciosa
Plumbago ~~capensis~~
~~Bougainvillea glabra~~
Celosia argentea
Ipomoea quamoclit
Pterocarpus indicus "narra"
Strathodea campanulata
Lantana camara
Casuarina equisetifolia

says that the big 3 dimension
ordinary spider orchids not
native here before about 1946.

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Jan. 7 - Anderson Airforce Base nursery.
Plants observed - mostly nursery stock:
Hibiscus hybrids.
Phaseolus lunatus
Polyscias fruticosa x filifolia
Eriobotrya japonica
Phyllanthus myrsinites
Antigonon leptopus
Zinnia elegans
Cassia alata
Tithonia speciosa
Catharanthus roseus
Kalanchoe pinnata
Ruffa angulata
Crotopsis sp.?
Caladium bicolor
Clerodendrum speciosum
Polyscias guilfoylei
Spathodea campanulata
Acalypha wilkesiana v. variegata
Barleria cristata
Clerodendrum wallichii
Angelonia angustifolia
Alternanthera ficoidea
Delonix regia
Albizzia sp.
Codiaeum variegatum
Catalpa longissima
Morus sp.
Citrus sp.
Casuarina equisetifolia
Bougainvillea spectabilis

Tabernaemontana divaricata
Bauhinia sp.
Nerium oleander
Solanum hyeropersicum
Alpinia speciosa
Brassica sp. (Bonsai grown very small crisped leaf)
Pedilanthus tithymaloides (both green and variegated forms - do not flower at same time)
Saccharum officinarum
Thespesia populnea
Jatropha multifida
Kaempferia candida
Canna hybrids
Tamarindus indica
Polyscias scutellaris

Jan. 7 - West and north of Northwest field.
Vegetation of a thick mixed shrub layer 2-4 m tall, as in abandoned clearings. Taller trees scattered through this. various species, mostly dead or at least the top dead, standing conspicuous white above the green layer. Possibly dying from defoliation, the crown of forest must have been heavy.

1954 Guam

Jan 2 - Mt. Makgom, ridge south of Pnt P.

Contained several rock types, especially the transition from structured red material above to weathered tuff below which, however is structureless.

One shows fossils definitely a transient from one to other.

Another seems to change rather abruptly.

One shows a bedded series 2-3 m thick of unconsolidated structureless bedding becoming plane and number of larger fragments greater downward. Red color thus pronounced downward, the beds really free from larger fragments (2 - 10 cm), less above. Color may have been washed down from red rock further upstad.

Jan. 3 - Asan Valley, above dam.

Here a thick series of rather fossiliferous bedded clays mixed in clay, a bit "round" rocks, like unconformability in

a heavy green clay of 1-2 m. to more thickness. Contact is irregular, with channels of clay included irregularly in upper layers of clay.

Very numerous thin discontinuous layers of carbonaceous material, apparently mostly sedge stems - some collected. Also a well preserved leaf & small dry fruit.

This material is at least 6-7 m down, yet has many root holes, some even with recognizable remains still in them. These are certainly modern while the carbonized remains are contemporaneous with the clay. Around these root molds clay is oxidized to red brown or yellow-brown.

Jan. 3 - Prominent thrusts reveal dam. s. of Agat.

Here slumping is very prominent because there is some clay underlying.

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Here the upper 5 dm. ± of the actual mesita is red, light brick red clay, a sharp break and is darker red clay with many apparently charred roots & very little that looks like ~~charcoal~~ burnt by fire is unlikely. Origin of lighter upper layer seems to be from material washed off the steep sides of this mesita by the strong wind. Typical's quantities in air, enough to feel on bare skin but especially in eyes.

Stop 9 - Road from Pago Bay to Umatac, by bay.

Around Pago Bay are mangroves very abundant, some Nipa swamp back of bay.

South of there on low coasts Casuarina is abundant, locally dominant, large trees.

Coastal strip officially six months, related to Coconuts. Along a part

of this coast are Cocos nucifera, formerly [illegible] with Pamplin Cocanut [illegible] of Pamplin for typhoon in 1949. Now Pamplin is continuous but very low and not tall.

In the Coconut plantations which in the Merizo region and southward, lie on the sandy coastal strip fringing the volcanics, there a vigorous growth of Guinea Bermudagrass.

The beaches in and east of Merizo are covered with a sod of Paspalum vaginatum

1954 Guam

Jan. 10 - Umatac

Hills right down to back of town are covered by Miscanthus, or if recently disturbed, by weeds. Casuarina trees are scattered generously over the hills. In the ravines and valley bottoms are thickets, especially Bambusa (spiny) and breadfruit. The broad relatively level valley bottoms are pastured or apparently uncommonly cultivated.

Toward the heads of the valleys, where the slopes begin to steepen, there is a black soil about 3 dm. deep, lying on a yellowish brown partially weathered rock. This is badly slumped in places. On these slopes the people attempt to cultivate tomatoes, but have trouble with a cricket that eats the leaves.

The steep slopes at the heads of the valleys are wooded, principally

with Artocarpus (Fagot), Hibiscus tiliaceus (Mago), Pandanus (Lunas) and both species of Pandanus, P. dubius (Faduhong) and P. tectorius (Hafa) with at least lower downs some Areca catechu. Cocos nucifera common on lower slopes, also breadfruit (Lulog), and Cycas.

In these valleys trade is much broken pottery, and tiles were formerly somewhat. But these have disappeared (acc. Joe Santiago). Pottery occurs in black soil.

Open fields here, when not cultivated, are dominated by Elephantopus mollis, Hyptis capitata, and Eleutheranthera indica.

Information from Joe Santiago:

Betel nut.

There are two kinds, indistinguishable except that one has the endosperm red and

1954 Guam

the young roots reddish inside, the other has the endosperm yellowish and the young roots whitish within. There is a difference in the quality for chewing. The seed arils of both turns red at maturity. They are chewed when green, red, or dry & leathery. Preferred when red. A young coco full brings 5¢ in the market. (Used effigies as seat, as he showed them to me)

Alocasia macrorhiza
= "apapa"
inedible

Alocasia sp.
= "piga" edible

Colocasia esculenta "pacencia"
because it bears before the weeds are stopped & and is eaten again next day
Only purple stemmed form seen.

Xanthosoma = Hawaiian Taro.

Adenodia merrillii
cult as street tree in

village, is sometimes used as a substitute for breadfruit.

Only two kinds of bamboo - ordinary one (Bambusa vulgaris?) and a spiny one.

Curcuma domestica
"Manga" (vopag) is used in food.

Curcuma sp.
"Manga galuntang"
is cooked with nose hairs.

Breadfruit season is April to August with some till October.
Dangdang has harder, redder wood than breadfruit and lasts longer. Excellent wood if ~~kept~~ used out of contact with moisture.

Yeast (ceramic / fabric)
Rice was an important food during the war. They are washed and pounded up, soaked for eight days in fresh water, changing water every day, to remove

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the person, then made into a flour for bread and cake. Those in southern Guam are smaller than those on the northern plateau. The recognized one I had in my bag for a northern no.

Casuarina = "gagu"

Reserala = "nanasu"

Cassytha = "magagai" which is used medicinally - boiled with flowers of another plant, "mwoting palawan", this liquid drunk for fatigue.

The mountains south of Sumalong Manfo are, in order, Chalandao, Chalan Pali, Nala, Bolanos, & Lehuede.

The strand north of Umatac has a terrace of rough coal, extraordinarily uniform in height, about 4 m. above the reef flat. This is covered by a low growth of Pemphis acidula

mostly dead at the tops and sprouting vigorously from the lower parts. 3 - 4 m tall. ~~Scaevola taccada~~ In places there is sand between the patches of coral. The base a mat of Paspalum vaginatum.

Between the terrace and the foot of the cliffs is a beach, usually of boulders but in places sand. Growing here are:

e Thespesia populnea
c Casuarina equisetifolia (trees 10 - 15 m tall & 1 ft. d.b.h.)
c Ipomoea pes-caprae
c Vernonia cinerea
c Canavalia glauca (small seedlings only)
lc Pandanus tectorius
lc Heterostemma indica (comp.)
o Ageratum conyzoides
o ~~Scaevola~~ Scaevola taccada
o Portulaca
r Vigna marina
r Hedyotis albida - punctata
r Clerodendrum inerme

In the cliffs above

1944 Jan

cane

a Triphasia trifolia
la Lantana plena
c Casuarina equisetifolia
c Cyperus filiformis
co Vernonia cinerea
lc Ageratum conyzoides
c Scaevola frutescens
c Passiflora foetida
o Ipomoea obscurifolia
o Miscanthus floridulus
n Cyperus circinalis
n Carica papaya

Jan 10 - Umatac. ~~on~~
~~encampment~~ water point,
base of cliff at head
of valley
Disturbed wooded ground
JSN11 ~~grass~~ Chamaesyce hypericifolia
4. common along roadside
in back ground.

6 17 Piper betle
climbing on tree, common

Jan. 10 - Umatac
along strand, above
high water

4 13
local but fair sized colony

100 m.

erect herb, to 1 m tall,
flowers bright red.
Said to have been brought
by Japanese for pot-herb.
stems sap with
acrid odor when crushed;
wrapped around betel
nut with lime and
tobacco for chewing.

1 m

flowers lavender.

1954 Guam

3541 4 Panicum
6 common on beach and lowerpart of cliff
1 15 Hedyotis albida - prostrate on rocks at top of beach
2 16 Phyllanthus niruroides Forst. f. among rocks
3 17 Phyllanthus amarus Schum. = Th. and G. L. Webster.
common among rocks
same - along road
3 18 Panicum
near cement wall
5 19 Abutilon
around culvert where stream goes under road

Jan. 11 - Urmatac - along strand above high-water
1 20 Hymenocallis littoralis
most abundant around fresh water seep, top of beach.
2 21 Lantana camara L.
one plant in thicket at top of beach near old house
4 22 Scleria - repens var. subulata Ridl.
at top of beach and in rock ledges just above.
1 23 Digitaria
at top of beach
3 24 Hyptis capitata Jacq.
at foot of cliffs, in slumped earth.

small tufts, strongly spreading.

(Mrs.) Feb. plant depressed, spreading; leaves not fleshy, leaves closing near sundown.
1959 creeping, roots glaucous beneath.

1-3 m. erect to prostrate

bush ca 1.5 m. tall, flowers orange yellow, not opening fully, many young fruits caducous.

1-3 m.

pedunc. compressed, flowers white.

shrub 1 m. tall; flowers bright yellow.

forming loose mat from primary tufts

erect, sparsely branched, leaves dark green; flowers white.

1954 Guam

35475 Amaranthus viridis
on beach around drain
from dwelling

South of Umatac the strand is similar to that to north, except that the 1 m. limestone platform is cut into smaller mor of a hummock, part of it actually missing. Covered by Pemphis, not as noticeably dead as to north of town, but still with tops dead and cut back to about 1 m or less.

On the beach are mats of Paspalum vaginatum, some Ipomoea macrantha, Ipomoea pes-caprae, and a shrub of Desmodium umbellatum, trees of Casuarina equisetifolia, Hernandia sonora, and Thespesia populnea. At the top of the beach ridge is Hymenocallis littoralis especially around fresh water seeps.

Otherwise no signs of any special vegetation around such seeps. Paspalum may be more luxuriant here

On the cliffs is a dense scrub, primarily Triphasia trifolia, but with Scaevola, Messerschmidia, Pandanus, Premna and Leucaena locally important, and with scattered Casuarina trees. Herbs are Polypodium scolopendria, Vernonia cinerea, Cyrtomium lanceolata, Hyptis pectenata, H. capitata, Ageratum conyzoides, Nephrolepis hirsutula, and Carissa. Cycas is occasional.

These cliffs are of volcanic breccia, but with seams and cracks filled with limestone

1951 Guam

Jan. 11 Highland south to southeast of Umatac - south of main cliffs -

(1) Eroded slope of dark brown soil

a. Dimeria chloridiformis
a Waltheria indica
c/a Stachytarpheta indica
c Heterogon contortus
c Phyllanthus corymbosa
c Cantharospermum scandens
c Hyptis suaveolens
c Hyptis capitata
c Desmodium foliformis
c Fimbristylis sp.
c Fimbristylis sp.
c Chrysopogon aciculatus
c Miscanthus floridulus
c Mitracarpum hirtum
c Centella asiatica
lc Phyllanthus virgatus
o Phyllanthus saffordii
o Andropogon fragilis
r Clerodendron ternifolia

some open ground is exposed here, but not enough to call it an erosion scar.

r Clerodendron ternifolia
a. Jacca leontopetaloides

(2) On weathered knobs of greenish volcanic breccia, recently rather seriously burned over, plant cover incomplete shrubs mostly just sending shoots out from base.

a Heterogon contortus
a Waltheria indica
c Casuarina equisetifolia
c Dimeria chloridiformis
c Phyllanthus corymbosa
lc Cynodon nlemfuensis
lc Dianella
lc Pandanus tectorius
lc Andropogon ~~bra~~ fragilis
lc Stachytarpheta indica
lc Hyptis suaveolens
lc Chrysopogon aciculatus
lc Phyllanthus virgatus
lc Fimbristylis cymosa
o Scleria sumatrensis
o ~~Scleria~~ Eugenia bryanii ?
o Scaevola frutescens
o Fimbristylis sp.
o Fimbristylis sp.
o Phyllanthus ~~saffordii~~ ?
r Morinda citrifolia
r Timonius
r Fimbristylis cymosa
r Triphasia trifolia
r Phyllanthus saffordii
r Emilia javanica

1954 Guam

(3) Rather heavily grazed pasture on flat to rolling dark soil.

a Hyptis suaveolens
a Chrysopogon aciculatus
a Waltheria indica
a Rhynchospora corymbosa
la Rhynchospora rubra?
la Stachytarpheta indica
c Dimeria chloridiformis
lc Hyptis capitata
lc Centella asiatica
o. Miscanthus floridulus
o Lindsaya ensiformis
o Fimbristylis (very local)
o Cassytha filiformis
r Gleichenia semiglobra
r Paspalum orbiculare
r Phyllanthus sp.
r Cassia sp. aequifolia
r Ipomoea littoralis
r Mitrasacmum sp.
r Elephantopus mollis

(4) grassy flat tops of clayey limestone with red soil. Thick grass here is badly overgrazed on most of this.

a Miscanthus floridulus
a Chrysopogon aciculatus
2a Gleichenia linearis
la, o Elephantopus mollis
la, c Mitrasacmum sp.

c Phyllanthus sp.
c Dimeria chloridiformis
c Waltheria indica
c Lygodium japonicum (very local)
c Rhynchospora corymbosa
c Centella asiatica
c Cassytha filiformis
lc Wikstroemia elliptica
lc Triphasia trifolia
lc Cyperus orthoclados
o Scaevola frutescens
o Melastoma malabathricum
o Hyptis capitata
o Hyptis suaveolens
o Pandanus tectorius
o Stachytarpheta indica
o Lindsaya ensiformis
o ~~Flo~~ Verbena cinerea
r Glossogyne tenuifolia
r Glochidion marianum
r Lygodium scandens
r Cassia sp. aequifolia
r Psidium guajava
r Decaspermum fruticosum

Grazing on rest of this area has greatly increased Mitrasacmum and Elephantopus, as well as some other things i.e.
Stachytarpheta
Hyptis suaveolens
Waltheria indica

1951 Jan 11

(5) same as 4 but on badly eroded area, sides, etc. Mostly bare red soil, some of it partially revegetated

a Blechnum lineare
a Chrysopogon aciculatus
c Miscanthus floridulus
c Andropogon fragilis
lc Timonius
lc Dianella
la Heteropogon contortus
lc Centella asiatica
lc Waltheria indica
lc, la, Mitracarpum hirtum

Jan. 11 South to southeast of Umatac
high grassy ground.

75426 Heteropogon contortus
5 in somewhat eroded grassland
1 27 Fimbristylis
eroded grassland
2 28 Digitaria ciliaris
rare in eroded grassland
4 29 Fimbristylis annua var.
d. common in eroded grassland
5 30 Wikstroemia elliptica
occasional on eroded
volcanic breccia
3 31 Eugenia bryanii?
common on eroded knob
4 32 Andropogon fragilis
common on eroded ground

lc, s Stenosma
o Gouania equisetifolia
o Pandanus tectorius
o Leucosyke frutescens
s Phyllanthus saffordii
c Emilia javanica
2 Hedyotis laxiflora
s Ipomoea littoralis
s Glochidion marianum
s Myrtella bonigaciana
s Wikstroemia elliptica
s Fimbristylis annua?
s Blechnum cartilagineum
s Stachytarpheta indica
s Cheilanthes tenuifolia

37-111-4

caespitose

scarcely caespitose

shoots from burned off bush; flowers greenish yellow.
sterile bushes, recovering from burning.

1954 June

35 433 Eurealyx orchioides
common locally in grassland

5 38 Fimbristylis schoenoides var. foliosa (Kük.) Fosb.
common locally in grassland

3 39 Diascia
common locally in eroded places in grassland

6 36 Waltheria indica
locally abundant in disturbed places.

1 37 Euphorbia
rare in somewhat eroded grassland.

5 38 Achyranthes aspera
abundant in overgrazed and disturbed spots. grows on bare soil.

4 39 Hedyotis lancifolia
common very locally in grassland

1 40 Ipomoea littoralis
rare in grassland

- 40a Emilia javanica (Burm. f.) Robs.
Jan. 11 - a.s.l. of Umatac, about 1 km. densely wooded ravine

1 41 Dioscorea
local in woods

5 42 Selvinia
epiphytic on tree trunks

6 43 Balanophora
a.b common, parasitic on
b.8 Triphasia trifolia root

80-100 m. flower bright yellow.

Fosb.

in small patches: flowers whitish, fruit immature

flowers yellow.

erect, flowers white

leaves yellow-green, aging purplish, flowers white, base within flower purple.

Twining. Fls. red.

90 m.

not certain that stipules and vine are connected. Vine mostly dead. margins wavy.

bright pink bracts and staminate flowers, pistillate deep carmine & brownish

1954 Guam

The forest in this ravine is dominated by Artocarpus altilis (both forms), and has an almost impenetrable understory of Triphasia trifolia. On the ground beneath, Balanophora is abundant, as well as Ophiuraeus. The height varies with the depths of the ravine, but is up to 25 m.

Composition, roughly:

a Artocarpus altilis
a Ophiuraeus umbellifolia
a Triphasia trifolia
c Pandanus tectorius
c Scaevola frutescens (edges)
c Morinda citrifolia
c Carica papaya
c Balanophora
o Pandanus dubius
o Cycas circinalis
o Areca catheca
o Musa sp.
o (Musaceae)
o Fagraea torreana
o Hibiscus tiliaceus
o Xanthostemon
o Pisonia

o Glochidion marianum
o Tectaria crenata
o Polypodium punctatum
r Selaginella
o Davallia solida
o Pinaceae

Even with a sharp machete progress through the upper parts of this rain forest is a slow and painful process. The easiest way in some places is to crawl on one's knees between the trunks & stems, but this is made hazardous by the wicked spiny roots of the Pinaceae that lace the boulders with its tough prickly vines. These roots lie in spiny clusters at the surface of the ground, among the leaves.

1954 Guam

35444 Areca catheca
2 large grove in valley bottom!

~~Mariyo~~

Jan. 12 - Merizo annex
Pandanus savanna
1 45 rare in weedy grassland

Jan. 12 - Umatac
2 46 Adenanthera microlliana
cultivated along street.

Jan. 12 - Merizo annex
savanna land stretches from Merizo annex village to the slopes of Mt. Lehroeder, which are largely covered by patches of ravine type forest.
The savanna area is generally level to

41 m. tree 4 m. tall; sheath of leaf closed; pinnae with 2 and 3 folds irregularly alternating; fruit immature, endosperm dull orange yellow in color. Fruit cluster at 3rd node below leaves

90 m.

flower orange green.

41 m.

Tree 3-4 m. tall; sheath of leaf closed, splitting at maturity; fruit scarlet when ripe. "Chinese betel nut" used as substitute for betel, especially by children.

rolling, with one or two shallow ravines with reeds, and a large black lava rock. Examined this area with view of delineating a conservation reserve. This, as planned, includes the peak of Mt. Lehroeder.

1954 Guam

with its steeper slope on all sides and the valleys of Halaygan and Tapaibung, stretching down toward Umatac and Merizo down as far as the line of black rocks south west of the lava knob mentioned above. This includes both level and steep savanna, eroded and depositional areas, and ravine and steep slope forests.

Pandanus savanna - weedy grassland, burned not too long ago, with scattered Pandanus rather abundant.

This area has been greatly disturbed but is mostly being reclaimed by Miscanthus, in more level places by Dimeria.

o,la Dimeria chloridiformis
la Miscanthus floridulus
la Stachytarpheta indica
cla Clephantopus mollis
c Sida acuta
c Hyptis capitata

c Waltheria indica
c Emilia javanica
c Heteropogon contortus
c Fimbristylis aurea
c Pandanus tectorius
lc Glossogyne tenuifolia
lc Phyllanthus saffordii
o Vernonia cinerea
o Euphorbia hirta
o Mitrasacme burtii
c Cassytha filiformis
lc Chrysopogon aciculatus
lc Centella asiatica
lc Scaevola frutescens
o Lycopodium Triflorum
o Floribidion micranthum
o Paspalum orbiculare
o Fimbristylis
o Hyptis decurrens
r Cheilanthes tenuifolia
r Ferns
r Paidium guajava
r Phyllanthus ligatus
r orchid

That the Miscanthus is an invader seems evident from the lack of established stubs and the smallness of the clumps. The Pandanus trunks are somewhat charred.

1994 Jan 9

alluvial flat, inland from this; dark brown soil with abundant small manganese nodules on the surface. Burned not too long ago. Curious mixture of Dimeria chloridiformis and Rhynchospora corymbosa, about equal, conspicuously tufted, exposing about 25% bare soil

a Dimeria chloridiformis
a Rhynchospora corymbosa
a Chrysopogon aciculatus
la Hyptis capitata
la Fimbristylis annua
c Waltheria indica
c Rhynchospora nitida
lc Cassytha aquisetifolia
lc Stachytarpheta indica
lc Phyllanthus virgatus
o Mikania periplocifolia
o Heteropogon contortus
o Phyllanthus saffordii
o Hyptis suaveolens
o Fimbristylis
r Ipomoea littoralis
r Euphorbia
r Vernonia cinerea
r Cheilanthes tenuifolia

Black laval; knob-old on lava; much eroded and weathered, recently burned over.

a Heteropogon contortus
la Stachytarpheta indica
c Pandanus tectorius
c Waltheria indica
c Dianella
c Eugenia bryanii
c Scaevola frutescens
c Phyllanthus saffordii
c Fimbristylis cymosa
c Elephantopus mollis
c Mikania periplocifolia
lc Heteropogon contortus
lc Hyptis capitata
o Hyptis suaveolens
o Andropogon pregrilis
o Dimeria chloridiformis
o Fimbristylis
o Wikstroemia
o Cassytha filiformis
o Doodia media
o Triplasis tifolia
o Selaginella
o Fimbristylis annua
l Eragrostis amabilis
l Emilia javanica
l Centella asiatica
r Cassytha aquisetifolia
r Glochidion wainianum
r Cordia dilatata
r Euphorbia

1954 Guam

= Desmodium triflorum
= Vigna luteola
= Vigna marina
= Mucuna gigantea
= Teramnus

J. G. Guinata, companion of Wiens, gave me the following information

Dimeria chloridiformis =
Chagnan manuc
(eaten by cattle)

Eragrostis cumingii =
Paimen galitan
(eaten by cattle and horses)

Eragrostis tenella =
Paimen Lupa (Spanish
chicken grass)

Vigna luteola =
Gabgab (grated
and dried, ready
cut, used for tamilo)

Jan 13 - Road between
Merizo and Inarajan

35447 Ipomoea
weedy roadside thicket

5 m

climbing over bushes,
flowers dull pink-purple.

1954 Guam

Jan. 13 - Martinez' Pasture
Dan Dan

Vast flattish basin draining eventually into Talofofo drainage system. Surrounded by flat-topped red erosion remnants. Much, if not all, of this red material is bedded depositional a secondary, such as is usually seen in small lens-shaped exposures. There are also a few thin limestone remnants, said to be argillaceous Marians.

In the pasture are 3 predominant grasses, at least in the northern edge - Chrysopogon, Dimeria, and Miscanthus. The latter is more localized. In the bottom of the basin is a stiff of reeds (Phragmites)

On the red rims, at least, the pasture seems to be overgrazed favoring the Chrysopogon. The Miscanthus is eaten down to wounded tussocks of stiff stems.

Jan. 15 - Matagpac Spring, n of Pat. Beach Road

An abundantly flowing spring coming out of a low hill of volcanic material at its contact with the Barrigada limestone. This contact is marked by a ravine and flat terrace of alluvium.

The most conspicuous vegetation is thickets of Bambusa, scattered abundantly in the ravine. On the steep sides around the spring great plants of Angiopteris evecta are very common, along with other ferns, such as Nephrolepis biserrata, Pteris cretata, Dryopteris indica?, and Davallia solida. Artocarpus, Pandanus dubius, P. tectarius, Elaeocarpus sp., Hibiscus tiliaceus and Morinda citrifolia make up the broad leafed thickets in addition to the bamboo. Cocos and Pinanga are common. Mosquitoes unbelievably vicious.

1954 Guam

Jan. 16 - Forest around Pago Bay is nearly all Leucaena glauca. This extends abundantly to Ylig Bay. There has a small red marsh at the mouth of the river. Forest along river is coconuts. Bluff to south of Ylig is Miscanthus with forest below.

Jan. 16 - south bank of Talofofo River, about 100 m. above mouth.
Mud flats at water's edge, recently flooded.

3	5448	Heliotropium indicum L. abundant on flat in hog pasture
3	49	Malvastrum coromandelianum on large limestone boulder fallen from cliff onto flat
2	50	Hedyotis biflora occasional on mud flat
1	51	Mollugo rare on mud flat
1	52	Torenia rare on mud flat
1	53	Torenia rare on mud flat
3	54	Ceratopteris gaudichaudii on mud at edge of water

O m

erect, most plants large, flowers lavender.

flowers dull orange yellow

flowers white.

prostrate

ascending

prostrate, rooting at nodes; flowers violet. leaves spreading, apparently producing plantlets; this seems to be a terrestrial phase for living through floods. No flowers seen.

1954 Guam

Jan. 16 - West of Mapao, 3 miles N.N.W. of Talofofo Bay

Ravine forest in upper part of shallow broad ravine -

Low bushy woods with uneven canopy, tangled undergrowth, this mainly Triphasia with scattered coconut trees.

Composition

a Pandanus dactorius
a Hibiscus tiliaceus
a Triphasia trifolia
a Clerodendrum inerme
c Glochidion marianum
c Premna tortuosa
c Dioscorea sp.
Pc Pandanus dubius
o Cycas circinalis
o Calanthe filiformis
o Pithecellobium dulce
o Flagellaria indica

45 1455 Dryopteris
" common on floor of forest
" 46 Scleria
common in edges of forest

100 m.

o Calophyllum inophyllum
o Ficus cathcuu
c Dryopteris
2 Cananga odorata
r Caesalpinia major
r Polypodium scolopendria

slope - prostrate, slightly denied.

sand - swamp forest on flat valley floor, with ponds of water and much mud.

The forest is largely a ranging mixture of Pandanus tectorius and Hibiscus tiliaceus, alternating with small patches and strips of Phragmites karka. Avicennia is receding. Clerodendrum inerme is locally abundant, as is Acrostichum aureum.

[illegible] 30 Patches of a large Rhyncho-
sp[illegible]. Freycinetia
climbing in trees, common.

35457 Rhynchospora
4 dense patch in mud
in broken swamp forest.

same - small eminence
at edge of swamp

[illegible] 90 mainly a thicket or scrub
of Trophasia, with some
[illegible] vines and a few large
trees, mainly # 35453

2 58 Histiopteris
common on [illegible] low
hill

2 59 [illegible]
epiphytic

scattered coconuts in
some places abundant.
Cananga very common
around edges.

2-3 m. [illegible] palms weakly
erect leaves sharp-edged.

50 40 m.

tree 15 m. tall, 6 dm. thick;
sterile.

leaves terete, [illegible] plant on
stilt roots; one bud, only, seen.

1954 Guam

35460 orchid
epiphytic

1 61 Hendrubia
epiphytic

same - slope forest just above swamp level.
Thick low tangled forest.

d. Hibiscus tiliaceus
c Cananga odorata
c Cestrum diurnum
c, la Triphasia trifolia
c ? 35458
o Morinda citrifolia
v Artocarpus altilis
o Cycas circinalis
o Aglaia marianensis
o Pandanus tectorius
o Pandanus dubius

same - on rough limestone outcrop - Mariana formation. Thick forest on rough, deeply pitted, broken karstfield surface - aspect rather dry, few epiphytes or terrestrial ferns; much bare rock under trees.

c Pandanus tectorius
c Pandanus dubius
c Annona reticulata
c Triphasia trifolia

Su-11=

somewhat caespitose; buds white.

c Cordia subcordata
c Aglaia marianensis
c Guettarda speciosa
c Bleekeria marianensis
c Guamia marianensis
c Fragraea fragrans
c Phyllanthus mariannensis
c Flagellaria indica
lc Cassytha filiformis
o Intsia bijuga
*r Pouteria
*r Eugenia reinwardtiana
o Polyscias marianna
o Pygeum lanceolata
o Piper guahamense
o Allophylus sp
o Cycas circinalis
o Polypodium punctatum
o Ipomoea indica
o Scaevola frutescens (edge)
r Morinda citrifolia
r Morinda umbellata
r Maytenus thompsonii
r Elaeocarpus
r Melanolepis multiglandulosa
r Artocarpus altilis (dooryard)
r Macaranga
r Neonauclea thompsonii
r Cerbera dilatata
r Premna obtusifolia

epiphytic

↑

1954 Guam

Jan. 17 – Tarague Beach
sand flat below cliffs

35402 Wedelia biflora
common in coconut grove

Where flat below is wide the cliff is really a slope, covered by good forest, apparently in good condition.

The flat largely covered by coconut plantation, this quite choked by coconut seedlings.

On the beach Pemphis, Messerschmidia, Scaevola and Scyphiphora are very conspicuous.

~~Cocoloba~~

Jan. 17 – Flat top of plateau between anderson field and Tarague Beach.

Here the forest is in extremely poor shape there is a scrubby layer which is continuous, 2-5 m. tall. Above this are rather closely scattered trees, full forest size, of various kinds. These are all either dead or

1-2 m.

sprawling herb, 1-2 m. long; flowers yellow.

On cliffs which are very steep or vertical Pemphis and Bikkia are dominant, with some Scaevola and Pandanus.

in very bad shape, with upper branches dead and bunches of sprouts along the trunk and main limbs.

I would judge that this is result of the forest being largely cleared, all except these large trees, which then suffered from exposure, most kinds of these forest trees being unable to stand it.

1954 Guam

Jan. 17 Just north of Campanaya Point (Lasaqueta Point)

Forest on steep slopes & bluffs. Medium height forest with uneven canopy and thick undergrowth.

Composition (subsoby plants)

c Ficus prolixa
c Schizocapsa plantaginea
c Ochrosia oppositifolia
c Macaranga
c Guamia mariannensis
c Morinda citrifolia
c Cestrum diurnum (edges)
o Aglaia mariannensis
o Psychotria mariana
o Pouteria
o Cynometra ramiflora
o Pisonia grandis
o Pipturus argenteus
o Premna obtusifolia
o Hibiscus tiliaceus
o Phyllanthus mariannus
o Melanolepis multiglandulosa
o Eugenia uniflora
o Triphasia trifolia
o Cyrtandra speciosa
o Ixora dipuga

sloping terrace at foot of cliffs, from 60 m. down to 10 m. or less.

Mostly covered by a forest similar to that on slope but with Pisonia grandis one of the most common trees. Barringtonia asiatica also common. This is rather open beneath, where well developed, except for a few Nephrolepis ferns.

The seaward edge of this terrace is not forested. It is a rough, pitted, "clearfield" surface, @ the edge at 7-10 in. above sea level. Below is an excellent development of the so-called "worm-algal" terrace, at about high tide level, irregularly developed, from absent up to many m. wide, very flat topped, washed by waves.

The edge of the terrace has a vegetation of dwarfed Pemphis plastered to the rock, crawling over the pits, and of

1954 Guam

Fimbristylis obtusifolia in shallow pits. Back a little the Pemphis becomes more luxuriant and there is some admixture of Heliotropium anomalum. There is also a little Phyllanthus sp., possibly dwarfed P. mariannus, dwarfed Callicarpa candicans, prostrate clumps of Ischaemum ? sp., Hedyotis albido-punctata, and Capparis cordifolia.

The vegetation, esp. the Pemphis, becomes more luxuriant until 10–15 m. back there is a zone of Wedelia biflora var. caracasana

This is varied by patches of Ipomoea pes-caprae and of Paspalum vaginatum ?, also a low patch or two of Messerschmidia with upper branches dead (from 1949 typhoon ?)

Immediately back of this and starting abruptly is a dense scrub 2–4 m. tall, the upper branches dead (from typhoon ?)

Messerschmidia argentea
Pandanus dubius
Pandanus tectorius
Hibiscus tiliaceus
Clerodendrum inerme
Ochrosia oppositifolia
Achrocarpus odoratus
Ipomoea tuba
Vigna marina

The trunks of some of the Messerschmidia were as much as 3 dm. thick.

Jan. 17 – just north of Campanaya (Tanaguan) Point, in low vegetation, on deeply pitted limestone near edge of terrace above sea. 10 m

35463 Canavalia ensiformis (Sw.) DC
2 occasional at edge of scrub

x 64 Phyllanthus mariannus M.A. sterile vine climbing over low vegetation.
in pitted limestone in very low vegetation near edge of cliff. Depressed shrub, leaves mostly vertically oriented

1954 Guam

35465 Ischaemum?
2 occasional in low vegetation a little back from edge of cliff.

3 66 Hedyotis albido-punctata
common in pits in limestone on terrace

3 67 Paspalum vaginatum
patches on limestone back from edge of cliff

2 68 Portulaca sarmentosa
rare on pitted limestone

2 69 Achyranthes
common in low vegetation back from edge of limestone cliff

1 70 Heliotropium procumbens
occasional in low vegetation on pitted limestone

3 71 Fimbristylis ~~obtusifolia~~
common on pitted limestone at top of cliff

5 72 Septuncus repens var.
common on pitted limestone

T 73 Wedelia biflora var. tangan
abundant on terrace back from edge of limestone cliff

Jan 17 - first month of Campanaya (tasanguan) this

5 74 Asplenium
on rocks at mouth of spring

5 75 Indigofera suffruticosa Mill.
common on roadside on slope

strongly depressed clumps, blades flat, no good spikes seen.

spreading; leaves fleshy; flowers white; fruit winged fleshy before ripening.
sterile; mat-forming.

prostrate, tangled patches; flowers yellow.
sprawling herb; flowers bright magenta.

prostrate, leaves and calyx fleshy.
caespitose.

prostrate, mat-forming

prostrate, sprawling herb, flowers yellow

20 ×.

50 ×. shrub 1 m. tall.

1954 Guam

Jan. 13 - one mi. s. of Taguac, on north plateau
Patch of forest, mainly Pandanus, a limestone soil

35476 Capsicum frutescens
6 very common in undergrowth

1 77 Tarenna
rare in undergrowth

5 78 Piper guahamense C.DC
common in undergrowth

7 79 Dryopteris
common in undergrowth

9 80 Geniostoma micranthum var. hoffei (g+B.) Fosb.
rare in ~~woo~~ second story of forest

4 81 Dendrobium
epiphytic on ~~tree~~ Pandanus ~~trunk~~

5 82 "
epiphytic on Pandanus trunk

1 83
epiphytic on Pandanus trunk

1 84
epiphytic on Pandanus trunk

1 85 Taeniophyllum
epiphytic on Pandanus trunk

This forest is 10-15 m. tall, canopy broken and

111 m.

herb about 1 m. tall, flowers greenish white, anthers blackish; ripe fruit scarlet.
shrub 3 m. tall; fruit immature
shrub 1.5 m. tall, spikes erect; plant with anise odor when broken.
shrub prostrate, slightly buried, trunks, fertile and sterile similar, erect, arching;
small tree 4-5 m. tall, flowers white.

caespitose, stiff; flowers yellow.
caespitose; flowers dull reddish.

roots flat, greenish; flower yellow.

thin incomplete, ground covered almost completely

1954 Guam

by tall nephrolepis biserrata and Dryopteris. Forest is largely Pandanus with no artocarpus or Ficus prolixa. Only a small patch investigated.

woody
- 6a Pandanus tectorius
- c Morinda citrifolia
- c Premna obtusifolia
- c Flagellaria indica
- c Capsicum
- ec Piper guahamense
- o Ochrosia oppositifolia
- o Cestrum diurnum
- o Triphasia trifolia
- o Guamia mariannensis
- o Eglaia mariannensis
- o Melanolepis multiglandulosa
- o Carica papaya
- r Maytenus
- r Tarenna
- r Diospyros
- r Claoxylon

herbs
- 4a Nephrolepis biserrata
- 1a Dryopteris
- c Davallia solida
- c Ipomoea indica
- c Selvinia ~~hoo~~ spicata
- c Vittaria elongata
- o Lygodium lanceolatum
- o Polypodium punctatum
- o Nephrolepis acutifolia
- o Coperia of nitida.

Jan. 18 - 1-1.5 km. s.e. of Agafo Guman, center of north plateau.
Thick forest, appearing rather secondary, dominated by ~~Pandanus~~, ~~with woody~~ artocarpus, trees mostly under 3 dm. d.b.h., a few much large. Undergrowth rather thick, locally, in thinner places in forest, of Nephrolepis biserrata.

woody
- a Artocarpus altilis (dagdag)
- c Ochrosia oppositifolia
- c Premna obtusifolia
- c Hibiscus tiliaceus
- c Eglaia mariannensis
- c Maytenus
- c Elaeocarpus joga
- c Diospyros
- c Triphasia trifolia
- c Guamia mariannensis
- c Piper guahamense
- c Pandanus tectorius
- c Flagellaria indica
- o Eugenia reinwardtiana
- o Claoxylon
- o Ficus tinctoria
- o Carica papaya
- o Marananga thompsonii

herbs
- 4a Nephrolepis biserrata (terrestris)

1954 Guam

(epiphytic)
Vittaria elongata
Davallia solida
Polypodium punctatum
Nephrodium dissidia pubescens
Asplenium nidus
Asplenium laserpitiifolium
Asplenium sp.
Belvisia spicata
Polypodium scolopendria
Nephrolepis cordifolia

Jan. 17 1-1.5 km. s.e. of Agafo Guman, thick forest

35486 Antrophyum reticulatum epiphytic

" 87 Paspalum conjugatum : in clearing in trampled soil

" 88 Dischidia pubescens common festooning tree trunks

" 89 Crassocephalum crepidioides common in clearing

Jan. 19 Asan roadside thicket on limestone

" 90 Gliricidia sepium local colony

175 m.

spreading climb
leaves thick, sap milky, flowers scarce, yellowish.
flowers brick red.

s.s.

spreading tree 6 m. tall, branches bare except some at tips which have tuft of leaves; flower clusters along bare branches; flowers pink with yellow spot in middle of standard, calyx maroon.

1954 Guam

Jan. 19 – south ridge of Mt. Alifan
Thick low forest

35491 Alocasia
2 common along lower edge of forest above road

F 92 Aglaia mariannensis
common tree

15 93 Ixora triantha
common in low woods, especially on west slopes, on limestone

5 94 Cordia subcordata
rare in low woods

7 95 Artocarpus ~~altilis~~ mariannensis
common tree in woods on limestone

5 96 Pteris
common on bare limestone along road.

~~96 Asplenium nidus~~
~~occasional in~~
Jan. 19 – north slopes of Mt. Almagosa
~~in ravine forest~~

2 97 Morinda umbellata var. glabra
occasional in ravine forest.

4 98 Timonius
bottom of old limestone quarry

2 99 Areca catheu
occasional in ravine forest

stem decumbent with distal part ascending; petioles mottled with purple; spathe yellow, spadix cream colored.

small tree (others fairly large); flowers orange.

small slender tree up to 5 m. tall. bracts pale toward base.

ripe fruit reddish, black.

shrub 2 m. tall, ripe fruit red.

spreading tree 15 m. tall; sap milky; sterile

Jan. 19.

twining vine, climbing in trees; buds white.

tree 5 m. tall, roots pinkish when cut, immature fruit with red endosperm.

1954 Guam

Jan. 19 - 2 km. s. of Mt. Alifan

35499a Sclería
in ravine forest, abundant

Jan. 19 - hills just n.e. of Apra Heights
partially revegetated erosion scars.

35500 Sclería
on slopes, especially under Casuarina trees where needles cover ground.

+ 01 rare in grassy spots

6 01 Blechnum orientale
one small colony seen

5 03 Melastoma malabathricum
common

Jan. 19 - slopes to east of Mt. Alifan, above Fena River Dam.

Ravine type forests alternating with slopes and ridges covered by Miscanthus. Several sites examined. The forest varies greatly in aspect and composition but is always low and dense, with undergrowth

15 m. [illegible] caespitose, culms ascending.

11 m. Ravine just n. of Afinahta. Has weakly developed ravine type forest, mostly Casuarina and Pandanus

culms solitary or almost so.

ment

erect; flowers dark blue; leaves bright green. shrubs 1-2 m. tall, dark green; flowers white, stamens yellowish with pink anthers.

One site, relatively low alt.
a Bambusa vulgaris
1a Pandanus dubius.
c Hibiscus tiliaceus
c Pandanus tectorius
c Areca catheu
c Cycas circinalis
c Cananga odorata
c Fagraea berteriana
c Erythrina indica
c Flagellaria indica
s Morinda citrifolia
c Timonius
a Cocos nucifera

1954 gram

another site, slightly higher alt.

Thick forest of an even height at about 6-8 m.

a Pandanus dubius
a Hibiscus tiliaceus
c Dryopteris
1c Areca catheca
o Glochidion ramiarum
o Medinilla rosea
o Cyrtandra cincinalis
o Triphasia trifolia
o Freycinetia torreciana

Another site, near Mt. Alayan

Very ragged forest with small openings and dense tangled undergrowth.

a Pandanus tectorius
a Hibiscus tiliaceus
a Ficus (large)
c Pandanus dubius
c Glochidion ramiarum
c Medinilla rosea
c Freycinetia torreciana
c Nephrolepis biserrata
c Miscanthus floridulus
in openings and some pockets under edge of forest trees - doubtful if really invading (?)

o *Cyrtandra cincinalis
r. Ficus Dera dilatata
r Areca catheca

r. Elaeocarpus joga
r Artocarpus Blancoi (Looks like medium form)

[redacted]. Sword-grass vegetation on slopes of lower argillaceous beds of Alifan limestone. Seem to be dip slope below low escarpment which is bared pinnacled of coral limestone. Grass is reasonably dense and 1.5 m. tall except where actual bare rock is exposed.

a Miscanthus floridulus
o Hyptis capitata
o Ageratum conyzoides
o Nephrolepis biserrata
o Premna obtusifolia (seedlings)
c Dryopteris
o Dibrella
r Wikstroemia elliptica
r Cyrtandra cincinalis

Forest on pitted (karst) hard limestone above the sword grass

Dense low forest, in many places only penetrable by liberal use of machete. Much of density due to pure

1954 Guam

patches of Pandanus dubius

a Pandanus dubius
c Pandanus tectorius
c Cocos nucifera
c Triphasia trifolia
c Tournefortia sericea
o Morinda citrifolia
c Claoxylon marianum
o Premna obtusifolia
o Piper guahamense
o Aglaia mariannensis
o Phyllanthus mariannensis
o Dracaena aletris
o Nephrolepis biserrata
r Ficus prolixa

Another site on Alifan limestone. ravine saddle -bet. Alifan and Almagosa Mts. Dense tangled forest.

a Pandanus dubius
c-a Pandanus tectorius
c Macaranga thompsonii
c Ficus prolixa
c Pipturus argenteus
c Triphasia trifolia
c Cycas circinalis
o Barringtonia asiatica
o Artocarpus altilis (dying)
o Cestrum diurnum
o Aglaia mariannensis
o Melanolepis multiglandulosa
r Guamia cathcartii

Alifan, east slope bet. ravine and saddle - list of woody species seen along road. (order not significant)

Intsia bijuga
Hibiscus tiliaceus
Ochrosia oppositifolia
Bambusa vulgaris
Triphasia trifolia
Guamia mariannensis
Premna obtusifolia
Artocarpus altilis
Melanolepis multiglandulosa
Ficus prolixa
Leucosyke putescens
Macaranga thompsonii
Claoxylon marianum
Guamia mariannensis
Ximenia reticulata
Carica papaya
Pipturus argenteus
Elaeocarpus joga
Melochia tiliaefolia
Pouteria
Cestrum diurnum
Muntingia calabura
Guamia cathcartii
Allophyllus
Guettarda speciosa
Piper guahamense
Premna obtusifolia
Ficus tinctoria
Psychotria mariana (common under ridge)
Psychotria - malaspinae
(only seen on W. slope)

1954 Guam

Jan. 20 - Tumon Beach

This is rather sparse coconut grove ranging to open - was completely cleared except for the coconuts in early 1946, acc. Dr. Douglas Osborn

Now there is an almost continuous understory ~~of~~ with a canopy about 4 - 6 m. high, the tree trunks up to 6 cm diam. except for Cocos which get much larger.

In general the vegetation is a weed community.

a Muntingia calabura
a Centrum diurnum
a Leucaena glauca
a Stachytarpheta indica
a Paspalum conjugatum
a Ophiomenus compositus
la Pennisetum polystachyon
la Blechum brownei
c Elephantopus spicatus
c Ipomoea indica
c Lida rhombifolia
c Lida acuta
lc Triumfetta semitriloba
o Pithecellobium dulce
(and a few large ones, obviously not cleared in 1946)
o Eragrostis amabilis
o Morinda citrifolia
o Canavalia microcarpa

o Pemphis frutida
o Cerbera echinata
o Clerodendrum inerme
o Polypodium scolopendria
la o Kalanchoe pinnata
la o Triphasia trifolia
o Phyllanthus mariannensis
l Ipomoea elongata
l Centella asiatica
l Ipomoea pes-caprae
(just near beach)
la Scaevola frutescens
(just near beach)
r Artocarpus altilis
r Casuarina equisetifolia
r Ximenia americana

One patch of Leucaena has tops dead. The twigs, to about 15 mm diam, had their bark removed, forming suggestion that Cebratina is responsible

Following formed the dense shade: a Leucaena (seedlings)
a Ophiomenus compositus
o Lida acuta
u Kalanchoe pinnata
o Polypodium scolopendria
c Cocos nucifera (seedlings)
r Carica papaya
(seedlings)

1954 Guam

Jan. 21 – 1 km. n.w. of Yigo. north plateau

35504 Maytenus
4 occasional in understory of forest

Jan. 21 – about 1 km. e. of Agafo Gumas, north plateau.

3 05 Conyza canadensis (L.) Cronq. var pusilla (Nutt.) Cronq.
abundant along roadside on crushed coral limestone

9 06 Bidens pilosa var. radiata
occasional along roadside on crushed coral limestone.

5 07 Caesalpinia major (Medic) Dandy & Sandy
common in secondary thickets.

Jan. 22 – Naval air station, Agaña, nursery

3 08 Malvaviscus
cultivated

1 09 Acacia confusa Merr.
cultivated

2 10
apparently planted

1 11 Hedyotis
weed

3 12 Acalypha
cultivated

155 m.
semi-scandent shrub 3 m. tall.

165 m.
erect

erect, sprs white.

heavy tangled vine; leaves glossy.

85 m.
shrub 2 m. tall, flowers scarlet.
diffusely branched tree 5 m. tall; flowers yellow.
prostrate; sterile.

erect, flowers white.

shrub. leaves edged with white.

1954 Guam

Jan. 22 - Anao, e. n. e of Mt. Santa Rosa

35 5 13 Euphorbia tiniaenensis Hook. f.
3 low terrace of deeply pitted limestone /

4 14 Blackeria raiateensis
occasional on steep cliff of limestone.

3 15 Ficus prolixa
occasional on cliff of rough limestone.

c 16 Peperomia
common on rough limestone cliff

i 17 Balanophora
rare on rough limestone cliff, Tiliphasia common but not certain that it is the host.

5 18 Ficus prolixa
common at top of limestone cliff

~~Jan. 22.~~ - plateau n. e. of Mt Santa Rosa, n. of Anao

~~19 Pseudomorus brunoniana~~
~~20~~ thick forest on rough limestone

5 19 Pseudomorus brunoniana
occasional

1 20 Eugenia javanica
rare

stems prostrate; flowers pale bronze-green.

10 m. shrub 4 m. tall, sap milky, fruit immature.

10 m. small tree with abundant aerial roots; figs immature (pedicels variable in length).

140 m. fleshy, leaves pale green beneath, darker green above. "pot pot-i" vernacular.

140 m. body yellowish, inflorescence and bracts skull rose pink.

160 m. tree 6 m. tall spreading, with many aerial roots. "nunu"

160 m.

shrub 2½ m. tall, ripe fruit and mature catkins pumpkin.

sapling, sterile. "makupa" fruit eaten.

1954 Guam

35521 Disclisia
1 epiphytic on tree trunk

3 22 Allophylus
rare

4 22 Guamia mariannensis
common

6 24 Randia cochinchinensis
rare

7 25 Alyxia
occasional

2- 26 Laportea latifolia
occasional

3 27 Ixora triantha
rare

21 29 Premna
rare

3 28 Eugenia
rare

4 30 Mucuna gigantea
rare

160 sterile vine, clinging to trunks by roots; ~~leaves~~ leaves glossy. "pot pupu" tree 10 m. tall, 12 cm. thick, sterile.
small tree 8 m. tall; leaves dark green, subglossy, ripe fruit red, glossy. "paipai" wood used for fencing handles and rafters
small tree 6-8 m. tall, fruit immature. "amac".
tangled vine climbing tree trunks, sap milky; fruit immature
"lederan"
sterile small tree "katuk palawan" bark said to ~~turn~~ stain when dry.
slender small tree 5 m. tall, sterile "paguakot"
tree 1 2 m. tall, 20 cm. thick; fruit immature, flowers whitish. "angilo" wood very flexible, used for bamboo shafts, sterile. "agatalang". vine tangled in trees; flowers green

1954 Guam

Jan. 22 Yigo

35531 Ipomoea indica (Burm.) Merr.
6 one colony seen in roadside thicket

5 " Vitex
planted along road

2 33 Alenrites moluccana
planted, rare

4 34 Alenrites moluccana
planted, rare

Jan. 23 Talofofo Village

2 35 Thunbergia
cultivated

Jan 23 - 1.5 km. s.w.w. of Talofofo Village

1 " Miscanthus floridulus
open savanna with tall dense grass, or deeply weathered volcanic rock

Jan 23 - Maagas River, Talofofo System, 1.5 km s. of Talofofo Village

7 37 Hernandia sulyvinthia ?
on low silty natural levee, uncommon

1954

twiner, flowers white
"bofga"

trees 12 m. tall, ripe fruit black.
small tree 5 m. tall, flowers white.
tree 10 m. tall, fruit immature; ripe stone picked up from ground beneath.

70 m.

vine climbing over house, flowers white, in pendant racemes.

125 m.

clump 2 m. tall.
(sample taken for analysis for silica)

15 m.

sterile tree 6 m. tall, spreading "monot"

1954 Guam

Jan. 23 - Fanagchan Toro.

Thick low forest on brown soil.

35538 Discocalyx
common in shade undergrowth

2 39 Balanophora
common, parasitic on roots of Triphasia.

1 40 Balanophora
same

This forest is scrubby, 3-5 m. tall, with a few coconut trees and occasional other trees extending above the rather complete canopy. The canopy is mostly Triphasia, the trees 3-6 cm. diam. Lacking in ferns. Ground is a dark brown soil, pH 6, loose at surface, in shot-like pellets - work of earthworms?

Composition:

a Triphasia
c Cocos nucifera
c Hibiscus tiliaceus
c Pisonia obtusifolia
c Morinda citrifolia
c Pandanus tectorius
c Areca catheu
c Glochidion mariana

65 m

shrub 1 m. tall, sparsely branched; fruit red, edible, pleasantly acid when ripe.

♀ plant body tan; inflorescence and bracts pink.

♂ same

c Flagellaria indica
c Discocalyx
c Balanophora (Chaboissi)
le Pandanus dubius
o Cycas circinalis
r Freycinetia amplexifolia
r Piper quadrangulare

This forest is in places readily penetrable; in other places the Triphasia is tangled and must be cut, which is not easy.

The absence of ferns and most herbs is conspicuous.

see p. 135 — for cont.

Jan. 24 - Campanaya Point

35541 Pisonia grandis R.Br.
3 common in thick forest on limestone terrace

x 42 Fleurya underalis
dissected and pitted limestone terrace just above sea.

The general forest here is very uneven and tangled - mostly Hibiscus tiliaceus, Pandanus tectorius, Pisonia and Cestrum. The under-story is dense, 3-5 m. tall. a scattered upper story of Pisonia, Ochrosia and Pandanus, 10-15 m. tall.

The general soil here is thin and red, lying on an irregular limestone substratum.

Composition here is:

a Hibiscus tiliaceus
a Triphasia trifolia
a Cestrum diurnum
c Pisonia grandis
c Pandanus tectorius
c Cycas circinalis
c Ochrosia oppositifolia
c Morinda citrifolia

20 m

tree 15 m. tall, 6 dm. thick (others large); leaves badly eaten by insects; sterile. stems red. flesh yellowish dull reddish.

c Guamia mariannensis
c Eugenia mariannensis
c Premna obtusifolia
• Psychotria mariana
Ipenings weedy a with mats of Leptaena reperm

Large clumps of Pisonia trees, quite tall, have an undergrowth of Guamia mariannensis
a Triphasia trifolia
a Cycas circinalis
c Pandanus tectorius
c Eugenia mariannensis
c Ochrosia oppositifolia
c Morinda citrifolia

There is very little humus here. The red soil is very thick, up to 3 dm. or more, very light, loose, and crumbly, a powdery, obviously much worked by earthworms (machete goes down with no resistance, at least when dry)

Seems obvious that the fruiting season is in the summer months (July-Sept.) in the Marianas, when the Pisonia seeds germinate in abundance.

Jan. 24 - 7 arroyo
35 543 ~~Acanthaceae~~ Bauhinia / multiplex (Lour) Raeusch.
2 cultivated as ornamental

Jan. 25 - Yoña
4 44 Cajanus cajan
abundant locally along roadside

Jan. 24 - Dan Dan
(Martinez Pasture)
on small limestone outcrops ~~a~~ slightly elevated above surrounding weathered volcanic soil.
2 45 Flueggea Tenuifolia
common in limestone crevices
1 46 Cuneliga orbicularis
common
1 47 Selaginella
very local on vertical ~~surface~~ surface of fine ~~grained~~ grained chalky limestone.
4 48 Alophylus
very local
4 49 Callicarpa candicans
local
3 50 Emilia sonchifolia
common
1 51 Physalanthus saffordii
occasional

15 m
det. McClure
carex slender, about 1 cm. thick, growing in a close clump, 2.5 m. tall.

7 Aug.
erect herb 1.5 m. tall, flowers yellow, standard lined with deep red outside.

L 10 1111.
flowers yellow.

flowers yellow, plants mostly sterile at this time.

low shrub, 0.5 m. tall, much branched, flowers white; fruit yellow.
low shrub 0.5 m tall;

flowers lavender, title exceeding involucre.

35552
4

common locally

1 53 Cantharospermum/scandroides
rare

1 54 Oxalis corniculata
occasional, rooted deep
in crevices

2 55 Hedyotis biflora
occasional

same - volcanic
soil

1 56 Euphorbia
rare

5 57 Jussiaea linifolia
small colony in moist
sink in volcanic soil

7 58 Andropogon fragilis
common on flat-topped
erosion remnants of red soil

Here is a large basin of
volcanic soil, gently
sloping to a reed-lined
stream which drains
into Pronajan valley on
the one just north of it.
Around the edges in
all directions are very
conspicuous erosion
scars, mostly rather
bright red.
On the east side
is a complex of exposures

flowers lavender

flowers yellowish.

flowers yellow.

prostrate; flowers white.

flowers white.

flowers yellow.

of several kinds of
limestone, including
at least two thin, rather
small and somewhat
dissected flat platforms
of the argillaceous member
of the Mariana formation.
This member has at least two
distinguishable beds of
older limestone.
Around the argillaceous
limestone the soil is of a
yellow-brown color, elsewhere
it is red.

1954 Jaram

Composition of vegetation on argillaceous limestone:

Miscanthus floridulus
Phyllanthus simplex
Hyptis suaveolens
Phyllanthus saffordii
Chrysopogon aciculatus
Oxalis corniculatus
Callicarpa cardicans
Glossogyne tenuifolia
Elephantopus mollis
Asclepias curassavica
Pedyotis biflora
Hypnedella nodiflora
Euphorbia hirta
Mitracarpum hirtum
Cassia sp.
Sida acuta
Psidium guajava
Centella asiatica
Wallheria indica
Hyptis capitata
Centrosperma ecandrum
Cusculigo retinoides.

On other limestone:

Miscanthus floridulus
Phyllanthus saffordii
Hyptis suaveolens
Glossogyne tenuifolia
Dimorphotheca stellulifolia
Phyllanthus simplex
Sporobolus elongatus
Sida acuta
Stachytarpheta indica

Psidium guajava

Composition of vegetation on volcanic soil immediately around limestone:

Miscanthus floridulus
Chrysopogon aciculatus
Dimeria clubiformis
Centella asiatica
Hyptis suaveolens
Hyptis capitata
Wallheria indica
Phyllanthus saffordii
Stachytarpheta indica
Vernonia cinerea
Mitracarpum hirtum

All of these types are grassland. Such shrubs as are there are much dwarfed.

It would appear that the small size of the area might account for so many of the species from the surrounding savanna being on these limestone patches.

There seems to be considerable evidence of slumping here, even on the more gentle slopes. Though it is hard to distinguish from lateral erosion.

1954 Guam

Jan. 26 – near Laguas, n. of base of Orote Peninsula marsh with standing water.

35559 4 Cyperus polystachyos Rottb. dominant over much of marsh.

3 60 Cyperus polystachyos Rottb. occasional in edge of marsh, in soft mud

3 61 Chara zeylanica abundant in open water

4 62 Bacopa monniera abundant in open part of marsh in mud

~~3~~ 4 63 Rhynchospora corymbosa common in open water part of marsh

3 64 Paspalum conjugatum common in open part of marsh.

3 65 Cassia occasional in mangroves at edge of marsh

Large pond & mud-flat, mostly covered by standing water, but this very shallow. In the water is a mat of Chara, and in it the Cyperus forms a sparse layer of tufts 3-5 cm. tall. The landward

D-1 sh.

small tufts

small tufts

bright green, odor especially noted.

forming luxuriant soft mat; flowers very pale lavender. culms erect, forming hummocks.

Cespitose, forming dense hummocks; leaves somewhat glaucous. vine clambering in trees.

edge is in places not submerged; even for some width. Here the wet mud is covered by mats of Paspalum vaginatum and of Bacopa monniera.

1954 Guam

Jan. 26 – Aguada River

Mangrove swamp.
partly filled with
crushed coral road fill

3	9566	Cyperus diffusus	spreading tuft
		rare on bare ground	
5	67	Eragrostis ciliaris	
		occasional on bare ground	
2	68	Eleocharis	
		rare on bare ground	
1	69	Cyperus polystachyos Rottb.	small tuft
		rare on bare ground	
3	70	Glochidion	small tree, 4 m tall.
		occasional at edge	flowers scarlet
		of mangrove in brushy	
		thicket.	
4	71	Lumnitzera coccinea	tree 6 m. tall, more or
		rare in mangrove swamp	less spire-shaped, with
4	72	Rhizophora apiculata Bl.	arching aerial roots.
		dominant in mangrove swamp	stems compressed.
1	73	Eleocharis	
		rare in grassy wet	
		area at edge of mangrove	
		swamp.	
5	74	Avicennia	tree up to 5 m. tall.
		common in sparse	mostly sterile (one flow-
		mangroves on firm	ering, this 4 parted, yellow).
		calcareous silt.	seedlings abundant.
			Pneumatophores slender, erect.
5	75	Caravallia	prostrate, annual,
		common on open gravel	leaves entire; flowers
		flat	not seen.

1954 Guam

Jan. 26 - ½ south of bay of Orote Peninsula open marshes partly filled in by wave-deposited gravel.

35575 Canavalia rosea (Sw.) DC
common in open gravelly

5 76 Panicum purpurascens
dominant in patches
in marsh

77 Fimbristylis
dominant in large
areas in marshes

5 78 Paspalum vaginatum
dominant in large
flats in edges of marshes

79 Avicennia
common in edges of
marsh.

Here are open water ponds cut off from the sea by broad sand and gravel ridges, these apparently widened by the washing inward of much of the loose material of the ridges and deposit of this around the bases of the Leucaena plants on the inner slopes of the ridges and into the edges of the ponds. The Leucaena is dead, at least above. Some plants are

Om

prostrate, elongate; leaves erect; flowers rose-pink, forming dense dead mat.

dense growth, from rhizome, forming dense deep mat.

trees 3 - 6 m. tall; foliage pale green; all trees seem sterile.

sprouting from the base. The spines that are on these beach ridges are largely Casuarina along the inner margin with Leucaena mixed, some Hibiscus tiliaceus and Thespesia mixed in. In open places on the sand and gravel is some Ipomoea pes-caprae and Canavalia

1954 Guam

The fonds are surrounded by flats of matted Paspalum vaginatum with large patches of Panicum purpurascens and Scirpus, as well as occasional clumps of Cyperus odoratus and Cyperus javanicus and scattered small trees of Avicennia.

~~Flats are completely stable~~
~~but [illegible]~~
~~and [illegible]~~

Jan. 24 - near Agualar River
Mangrove swamp with Rhizophora and Avicennia from very sparse to quite dense, growing on fine lime-silt firm enough to walk on at low tide. Lumnitzera is rare and very local. Some Acrostichum present especially on landward side of road. A large area of this is dead or almost so, probably from oil on the water drifting in from aqua-duct. The trees are still standing.

A fill of crushed coral has [illegible] as pioneer species:
Chloris inflata
Dactyloctenium aegyptium
Leda rhombifolia
Tridax procumbens
Corchorus acutifolia
Ipomoea pes-caprae
Heliotropium ovalifolium
Cyperus odoratus
Leucaena glauca
Cyperus difformis
Phyllanthus niruri
Scaevola frutescens
Eragrostis ciliaris
Eleocharis
Cenchrus echinatus
Malachra
Pennisetum polystachyon
Euphorbia hirta
Stachytarpheta indica
Eclipta alba
Vernonia cinerea
Eleusine indica
Cyperus iria?
Fimbristylis cymosa
Neptunia oleracea

Beside this is a patch of Miscanthus floridulus on a small hump of argillaceous limestone. This seems to be being crowded out by Leucaena - there are large bushes scattered & and many young plants.

Where the swamp is thickest [illegible] and this changes abruptly to sandy soil with a scattering of Pandanus & Cocos. It is common on the edge of the swamp, as well as in the swamp.

1954 Guam

Jan. 26 - Orote Peninsula, central upland

35580 Saccharum spontaneum common locally on open dry limestone. 20 m. culms erect, in clumps, 2 - 2.5 tall.

Jan. 27 - Agaña

1 81 Chrysophyllum cainito cultivated 25 m. sterile spreading tree 5 m. tall.

Jan 27 - Fonte (Con Mariana) Hill, n. of upper Fonte River nursery 150 m.

1 82 Tabebuia pentaphylla cultivated small tree 7 m. tall, flowers purplish pink.

2 83 Cassia fistula cultivated small spreading tree, fruits pendent. about 1 m. tall flowers vermilion, fruits dark red

3 84 Ixora coccinea cultivated culms deflexed & ascending, rooting at nods. 150 m. about 1 m. tall, flowers bright yellow.

5 85 grass common weed

5 86 Tecoma stans cultivated sprawling large bush, flowers yellow.

4 87 Tithonia diversifolia established around nursery. very erect small tree, aromatic when broken.

3 88 Pimenta cultivated

sand - in brushy thicket 100 m.

1 89 Jatropha curcas L. shrub 3 m. tall, flowers pale green, fruit immature.

90 Citrus small dark green; fruits round yellow, aromatic, very sour.

1954 Guam

Jan. 27 - Mangilao

abandoned nursery site

1 35591 Coccoloba uvifera

1 92 Cordia sebastena
in shade

3 93 Cinnamomum camphora

3 94 [illegible]

5 95 Vitex Trifolia

4 96 Bixa orellana

1 97 [illegible]

same - roadside

6 98 Eucalyptus

same - experiment station

1 99 Bauhinia blakeana
cultivated

same - around dwellings

35600 Clerodendrum siphonanthum
growing up through hedge

7 01 Graptophyllum pictum
cultivated

65 m.

shrub 1.5 m. tall, sterile.

shrub 3-4 m. tall,
sterile.

small tree; leaves
glaucous beneath; sterile.

small tree, branches
semi-pendent and
"weeping"; sterile.

shrub ½ m. tall, aromatic;
flowers violet.

shrub 1.5 m. tall;
flowers pink;
"form with long pointed fruits";

shrub ½ m. tall, sterile.

tree 12 m tall, aromatic.

shrub. flower rich
crimson-magenta;
(recently imported from
Hongkong).

calyx lobes with
margins recurved.
upper surface red.

shrub 2.5 m. tall, leaves
bronze and bronze-white;
flowers dull magenta.
laterally compressed.

1954 Guam

3560x 4 — 02 Graptophyllum pictum cultivates

— 03 Bauhinia monandra cultivated

1 — 04 Tabernaemontana divaricata

4 — 05 Ipomoea macrantha (South) Rob. aveda sfantaneonia vacant lot.

1 — 06 Duranta repens cultivated

2 — 07 Schinus terebinthifolia cultivated

3 — 08 Phyllanthus acidus cultivated

3 — 09 Bauhinia cultivated

3 — 10 Acacia confusa cultivated

1 — 11 Aphelandra? cultivated

1 — 12 Grevillea robusta cultivated

1 — 13 Miscanthus floridulus patch in field back of house (no land number) open

15m — shrub 2 m. tall; leaves green and white; flowers deep dull magenta, laterally compressed.

— tall shrub, sprawling over house roof; flowers pink with red blotch on one petal.

— shrub 2 m. tall; flowers white.

— Chinese garden; erect, 1.5 m. tall, tangled; flowers lilac.

— shrub, flowers pale violet.

— shrub 1 m. tall; flowers greenish.

— small tree; flowers dark brick red.

— shrub 3 m. tall; flowers bright purple immature fruits mottled with red.

— low rounded tree; flowers bright yellow.

— fragrant.

— shrub 1 m. tall; flower scarlet.

— low spreading young tree; sterile.

— clumps 2 m. tall.

in limestone soil.

1954 Guam

same - cultivated in nurseries

3	5619	Jasminum pubescens
1	15	Plumeria rubra
3	16	Polyscias fruticosa
1	17	Cactus
1	18	Ipomoea quamoclit
1	19	
1	20	Hemigraphis repens
1	21	Kalanchoe
1	22	Kalanchoe
1	23	Thuja orientalis
	24	
1	25	Calathea in lath-house
1	26	in lath house
2	27	Bauhinia
2	28	Bauhinia
2	29	Melia azedarach
1	30	Begonia in lath house
1	31	Kalanchoe in pots

15th

- shrub 1 m. tall, flower white, fragrant.
- fruiting freely.
- shrub 1.5 m. tall.
- stem spiral, 1 m. tall
- flowers red.
- leaves veined with white.
- weed in pots; flower pale lavender.
- leaves ternate, mottled
- leaves fleshy, flattened
- erect shrub 1 m. tall,
- branch systems erect.
- shrub, flowers scarlet.
- leaves purple beneath green above with sharp white and pink lines.
- vine, sterile: pubescent bright purple.
- shrub 4 m. tall; flowers white with red stamens and style.
- shrub 3 m. tall; flowers scarlet.
- small tree 4 m. tall, flowers lilac.
- Cassia fleckii; flowers pink, pales within.
- leaves fleshy, variegated.
- sterile.

1954 Guam

3,5692 [illegible]

1 33 Dieffenbachia

2 34 Polyscias

~~1~~ 35 Polyscias trinochleatus

1 36 Thuja

2 37 Polyscias

1 38 Euphorbia pulcherrima

2 39 Guiacum officinale

1 40 Polyscias fruticosus

2 41 Phyllodendron

1 42 Chrysophyllum cainito

same - old nursery site

2 43 Thunbergia grandiflora

~~same~~

Jan. 28 - Santa Rosa Peak

1 44 Polygala paniculata
common on eroded volcanic soil

Jan. 28 - 1/2 mi. West of Harmonfield

1 45 Pennisetum purpureum
abundant locally on
cleared coral soil

1 ~~bare~~ erect shrub;
leaves variegated
with dull gray.

erect shrub; leaves
green with white spots,
shrub up to 2 m. tall,

leaves extremely cariated.

shrub 1.5 m. tall; leaves
with white variegation
around margin; sterile.

~~same~~ small plant in pot.

shrub 2 m. tall, leaves
dark green; sterile.

trunks scarlet.

shrub 1 m tall. sterile.

shrub 2 m. tall,
leaves variegated; sterile.

vine; sterile.

seedling in pot.

vine climbing over
tree; flowers blue-
lavender.

2 60 m. flowers white.

5½ m. tangled climber 2-3 m.
tall. (sample collected
for silica analysis)

1951 Guam

Jan. 29 - Pago Bay
A rather broken down swamp area with patches of Nipa fruticans, ~~and~~ of Rhizophora, of Hibiscus tiliaceus, tangled with Ceriodentum inerme and Derris trifoliata. Small patches and admixtures of Phragmites.

3564 Bruguiera conjugata
4 rare, edge of stream

Patch of sword grass on hill just south of bridge
4 46 Psychotria manana
rare in sword grass on limestone slope

Miscanthus growing on brown soil on argillaceous limestone, around edges being shaded out by Leucaena and some Triphasia.
In the shade the Miscanthus is very loose and elongate. Some burned stalks at the top of the ridge indicate a fire not

some Thespesia populnea around the edges is a herbaceous vegetation of Paspalum vaginatum with clumps of Cyperus javanicus and patches of Panicum pur-ascens.

9 m small tree 3-4 m. tall; calyx red "mange" wood said to be used for making ranches or temporary houses.

50 m.

shrub 1 m. tall; flowers white.

too long ago, but it was long enough ago so that Miscanthus and Leucaena have grown quite luxuriantly. There is much more soil accumulated on the lower slopes in the Leucaena than above in the grass. Few Leucaena seedlings

1154 Fresh

composition:

a Miscanthus floridulus
l+o Chrysopogon aciculatus
a ~~Tr~~ Panicum glaucum
c Triphasia trifolia
c Clerodendrum inerme
c Callicarpa cardiacea
lc Stachytarpheta indica
lc Cassytha filiformis
lc,r Wedelia biflora
o Morinda citrifolia
o Pisidium guajava
o Jacq leontopetaloides
o Scaevola mersana
o Hyptis pectinata
o Waltheria indica
o Passiflora foetida
o Ipomoea indica
lo Fimbristylis obtusifolia
lo Cassia occidentalis
~ Hyptis capitata
~ Lida acuta
~ ~~Dactyloctenium~~
~ Anthaxosperma ecuduvis

Jan. 29 Ylig Bay

The swamp here is poorly developed near

In patch of Miscanthus

5647 Cassia
4 occasional in tall grass
4 78 ~~Rapistrum~~
near edge of swamp slope

the bay, with a small patch of Phragmites communis Nipa and Hibiscus tiliaceus. A large area is dominated by Rhizophora a short distance upstream. A luxuriant patch of reed-grass occupies a steep slope of argillaceous limestone above a wooded cliff south of the bridge.

a Miscanthus floridulus
a Triphasia trifolia
c Wedelia biflora var. canescens
lc Wikstroemia foetida
lc Clerodendrum inerme
lc ~~Clerodendrum~~ Cassytha filiformis
lc Nephrolepis biserrata
o Derris trifoliata
o Morinda citrifolia
~ Cassia sp.
~ Passiflora mersana
~ Ficus tinctoria
~ Premna obtusifolia

The wooded ~~cliff~~ below is principally a dense thicket of Triphasia, with some Hibiscus, Pandanus, and Cerbera.

60 m. [direction]

weak shrub up to 1 m. tall, flowers yellow; fruit immature
shrub 2 m. tall, stem;

1954 Guam

Jan. 29 - Talofofo Bay
patch of sword-grass
at hill 40, south of
bridge.
Pediment stand
of Miscanthus with
little else, on deep
red-brown soil on
argillaceous limestone.
Leucaena is encroaching
and shading it out
around the edges.
2 Miscanthus floridulus
la. o Leucaena glauca
c Clerodendrum inerme
o Triphasia trifolia
o Morinda citrifolia
o Lida acuta
o Colubrina asiatica
r Cassia occidentalis
r Indigofera tinctoria

Jan. 30 - Umatac
Marshy place at
mouth of stream
35649 Bambusa blumeana Schult. f.
Locally abundant.

large clumps, culms
crowded together, up to
7 cm. thick, dark green,
hard, woody, wood
up to 1 cm. thick, internodes
getting longer upward
to 3 dm. long; branches
abundant, solid, lower ones
making a tangled spiny
mass, mostly bare of leaves

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3 5 6 5 0		Echinochloa dominant locally in mud	0-1 m	culms decumbent to ascending.
2	51	Eichhornia crassipes dominant locally in mud		flowering spike erect, flowers purple, older spikes bending downward flowers lavender, dark purple in center.
1	52	Ipomoea aquatica common locally in mud		prostrate, flowers lavender, throat closed, all three petals flat.
3	53	rough common on moist ground		erect, flowers yellow
1	54	Commelina rare on moist ground		
1	55	Crotalaria quinquefolia rare on moist ground		
1	56	Ipomoea cultivated, Cambrinar brook		flowers deep red-purple
		Jan. 30 - n. side Pago Valley	60 m.	
2	57	Bambusa vulgaris Schard. in Wendl. in thickets		clumps, canes about 2-3 dm. apart; dark green internodes up to 2.5 dm. l.
		Jan. 30 - hills behind Inarajan, n. of Inarajan Valley	70 m.	
6	58	Euphorbia local along roadside in volcanic soil.	red	arching, flowers white.
2	59	local on bare eroded volcanic breccia		prostrate

Jan. 30 - just s. of Achang Point

35660 Abutilon
> common along road

Jan. 30 - Achang Bay, east of Meitzo
mangrove swamps
3 61 Xylocarpus granatus
rare along shore
3 62 Avicennia
rare along shore

~~Jan. 30 Meitzo~~
6 63 Enhalus acoroides
forming large beds in shallow water of lagoon, sandy mud bottom

Jan. 30 - Meitzo
3 64 Rhizophora mucronata
common on muddy shore of inlet
3 65 Sporobolus virginicus
dominant all along beach, forming a belt just above high tide.
3 66 ~~Hibiscus~~ Albizzia lebbek
in school yard
6 67 ~~Albizzia~~ Abutilon
common along roadside and weedy places

shrub 2 m. tall, stems red, flowers opening out flat, pale orange.
0 m.

small tree, sterile

shrub 1.5 m. tall, leaves pale yellowish green; sterile.

-1 m. rhizomes buried in mud; sterile.

0 m.
small tree; flowers white.
1 m.
forming a sod.

2 m. small spreading tree; pods pendent.
1 m. shrub 1 m. tall; flowers orange.

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35668 Livistona chinensis
cultivated

Jan. 31 - top of cliff above Tarague Beach

c 69 Hedyotis foetida var. mariannensis
common on bare limestone
ledges.

1 70 Digitaria gandichaudii
rare on bare rock ledges.

5 71 Bidens pilosa var. radiata
abundant on roadsides
and cleared or scraped
areas on limestone.

2 72 Ipomoea tuba
occasional in brush at
top of cliff.

same - in thick forest
on slope at bottom of cliff

4 73 Psychotria
sp.

x m. tree about 4½ m. tall,
trunk without definite
scars, but with
ringlike roughening
near the top. Fronds
axillary; fruit dull
greenish, turning black,
fronds arching
out and somewhat
downward.

1.40 m.

small compact rounded
much branched bush,
malodorous when broken;
flowers white, anthers
dark gray.

branched herbs to
0.7 m. tall, rays white.

vine, flower white.

.70-.90 m.

shrub 2 m. tall; fruit
immature

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Jan. 31 – Tarague beach

35674 Leptonus repens var. subulatus Fosb.
common on sand

75 Cenchrus brownii
rare on sand

76 Ipomoea
rare, two small patches
seen on sand bottom
in about 1 m. water

Jan. 31 – east of Agafo'gum
secondary forest
with locally, a few
big trees of Elaeocarpus
fair sized ones of Claoxylon
Pebrosia, Aglaia, etc.
with fairly complete
canopy at about 10 m.
Walking is not too bad
without machete, but
easier without.

Composition:

c Aglaia mariannensis
c Ficus prolixa
c Claoxylon marianense
c Guamia [illegible]
c Hibiscus tiliaceus
c Pebrosia opositifolia
c Pandanus tectorius
c Flagellaria indica
c Tuinbrasia rufolia
s Elaeocarpus joga
v Artocarpus altilis

glt.
1 m. forming loose mat.
1 m. stems prostrate.
-1 m. forming dense soft
orbicl. collects sand
steils.

o Morinda citrifolia
o Mayteneus
o Melanolepis multiglandulosa
o Carica papaya
c Piper guahamense
c Oiscocalyx

fern - terrestrial
Nephrolepis biserrata

fern - epiphytic
Davallia solida
Asplenium nidus
Polypodium pumilatum
Polypodium scolopendria
Asplenium laserpitiifolium
Asplenium falcatum
Pelvisia spicata
Humata heterophylla
Nephrolepis hirsutula
Antrophyum reticulatum
Vittaria elongata

other epiphytes
Dendrobium
various orchids

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Along recently cleared roadway in this woods is a community dominated by Carica papaya. This clearing seems to be the thing to occupy a fresh clearing in the forest. With it are various minor weeds, Asclepias curassavica and especially Nephrolepis biserrata which are conspicuous, and young plants of Morinda citrifolia are common. This is a ruderal community seen very commonly in the plateau forest immediately following disturbance.

Jan 22 - Anao

Area proposed to govern Ledge to be set aside as conservation reserve - extending from Anao Point south, and from south boundary of Anderson AFB south, east of Calvo and Blas properties.

Examined in company of Calvo + Blas.

Made up of an area of plateau top, the "rampart" at the edge of the cliff, the cliff face and steep slope below, and two terraces, one just above the sea.

The plateau top is mostly in rather good forest, though part of the area has a large number of dead trees. In the part examined these were mostly Intsia, and are said by the local people to be affected by "bugs" both in roots and tops. Some Intsia present, which are essentially leafless - this said by the local people to be normal condition of large "ifil" trees. This forest is remarkable for its almost complete lack of Artocarpus trees, which are dominant on most parts of the plateau

1954 Guam

which remain wooded. Certain parts of this forest were apparently cleared as they are now filled by Macaranga seedlings 3-4 m tall. Acc. Calvo and Plas cleared by Japanese. Composition of reasonably intact portion:

c Clausylon marianensis
c Ochrocarpos odoratus
c Aglaia marianensis
c Ochrosia oppositifolia
c Guamia marianensis
c Cycas circinalis
c Carica papaya
o Pseudomorus brunoniana
o Triphasia trifolia
c Pandanus dubius
o Intsia bijuga
c Tristiopsis
o Morinda citrifolia
c Raputea latifolia
o Cynometra
c Premna obtusifolia
c Psychotria mariana
c Pandanus tectorius
o Macaranga
o Clausocarpus yoga
o Hibiscus tiliaceus
o Pouteria
r Allophylus
r Ixora triantha

Nephrolepis hirsutula
Polypodium scolopendria
Alsophis toweriana
Piper guahamense
Davallia solida
Dryopteris
Undergrowth is not generally too thick to walk through, at least with a relatively small amount of cutting.

The "rampart" - cliff edge is covered by a scrub. By largely made up of:
a Triphasia trifolia
c Polypodium scolopendria
c Cynometra
c Asplenium nidus
c Psychotria mariana
o Ficus prolixa
o Cycas circinalis
o Premna obtusifolia

The steep rock slope of the cliff has a scrubby forest, apparently relatively undisturbed, of:
a Ochrocarpos odoratus
c Cycas circinalis
c Guamia marianensis
c Guettarda speciosa
c Plectheria marianensis
c Aglaia marianensis

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c ~~Cyrtandra~~ Colubrina asiatica
c Clynometra
c Triphasia trifolia
o Ochrosia oppositifolia
o Ficus prolixa
~~x Guamia mariannae~~
r Guamia
and with annuals + plants:
a Asplenium caudatum
c Phyllanthus mariannae
o Nephrolepis biserrata
v Polypodium scolopendria
o Pepkomia
o Jasminum simplicifolium
r Polyscias grandifolia
v Alyxia tonduziana
Asplenium nidus
Procris pedunculata

Forest on slopes at foot of cliff:
a Ostrearpa ~~odoratus~~
c Aglaia marianensis
c Guettarda speciosa
c Hibiscus tiliaceus (a in lower part
c Cycas circinalis
c Triphasia trifolia
o. Morinda citrifolia
v Intsia bijuga
o Carica papaya
o Ficus prolixa
o Melanolepis multiglandulosa
o Polypodium scolopendria

The upper terrace is covered by Hibiscus tiliaceus with scattered coconut trees, with much Triphasia trifolia The soil is brown. During the war much of it was cleared and planted to bananas Opening now covered by thickets of Triphasia and Clerodendrum inerme

The lower terrace is karrenfeld (the term "fanaca" is used for karrenfeld by Guamanians) about 50 m. wide, inside of which is a gentle slope of gravel
The karrenfeld is covered by a discontinuous low matted vegetation of
a Pemphis acidula
c Fimbristylis
o Heliotropium anomalum
o Hedyotis albido-punctata
o Scaevola seedlings
a Euphorbia tinianensis
There are some patches of open ~~sand~~ gravel. On these are seedlings of Cocaeva glauca, scattered, grarled 3-4 inches tall.

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Inside the Barrandfield is a discontinuous belt of Casuarina with a little Pisonia partly replaced by a scrub 1± m tall of Scaevola and Wedelia. Under the Casuarina is bare ground covered by a bed of bare needles and scattered Achyranthes aspera, Calliandra cadia and Capparis candata.

Inside this is a belt of Hibiscus tiliaceus and Clerodendrum inerme about 2-3 m. tall.

Manuel Calvo and Joaquin Blas gave me many vernacular names and some other information on plants seen: (determinations are very sight ones)

Faia — Tristiropsis
trunks always straight, used for lyombe.
most of dead trees seen were this said to be from insect attacks both on roots and tops, acc. Blas.

Ahgal — Premna obtusifolia

Makupa — Eugenia javanica

~~Escato~~ — fruit eaten

Laniti — Bleekeria mananneo

Lonogo — Glochidion mariannense

Katula Cabi — Clausylon mariannense
dry bark said to make a skin itch.

Lada — Morinda citrifolia

Panao — Guettarda speciosa

Hodda — Ficus tinctoria
~~Fago~~ fruit eaten

Fago — Ochrosia oppositifolia
seed eaten

Pupulo anita — Piper guehamense
(Pupulo = Piper betle)

Mapuno — Aglaia mariannensis

Paipai — Pelaxia mariannensis
wood used for frame handles and rafters.

Federico } Cycas circinalis
Fadang }

Aplok Hating — Psychotria mariana

Ahmahagan — Pisonia argentea
bark scraped off and applied to boils.

Angilo — Grewia
bark very flexible. used for houses.

Guaguahot — Ixora triantha

Agatalano — Eugenia sp.

Pengua — Macaranga thompsonii
wood used for firewood and building lumber.

Chopag — Ochrocarpos odoratus

Katula Palauan — Laportea latifolia
bark said to stain skin when dry. (Palauan woman)

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Sumac - Rhus cochinchinensis
Otot - Dioscorea
fruit edible
Gulus - Cyrometra
Ladesuan - Alyxia troviana
Morinda umbellata
Jasminum simplifolium
vines said to be very
strong, three different
kinds
Ifil - Intsia bijuga
much logged before war.
stumps and some logs
still lying around from
1917 (Gen. Pleas), those
examined not much rotted.
Taken out on sleds pulled
by carabao.
Tufunangunga - Premna peluviata
trans. coconut crab sugar cane
Pot pupet - Pisonia
Peperomia
Two kinds recognized, the
Peperomia used medicinally
Lulubut - Maytenus
Lago Katu - Achyranthes aspera
Gaenau - Colubrina asiatica
Ladegan - Clerodendrum inerme
Tea of dry leaves used for
high fevers.
Nooluug - Pisonia grandis
Amlat - Calliscarpa candicans
Atafanin - Caffparis cordata
Fanaca - Scaevola frutescens
Triga - Pemphis acidula

Tangantangan - Leucaena glauca
Piga - Abrasin (with fruit
edible petioles
Papan - Abrasin (with hairy
inedible mottled stem)
Alum - Melanolepis multiglandulosa
Fago - Ochrosia oppositifolia
Pakan - Caesalpinia major
Bitnan natuntam -
Flagellaria indica
trans. "wild wicker"
(To contrast with an intro-
duced bitnan from Philippines
used in handicraft)
Murunutumu - Hyptis pectinata

1951 Guam

Jan 22 – Naval air station
Agana Nursery
(see p. 180)
Plants observed in the nursery – mostly planting material destined for planting on the air station.

Bougainvillea glabra
Barleria cristata
Gaillardia picta
Rhoeo discolor
Celosia argentea
Impatiens balsamina
Catharanthus roseus
Phyllanthus nivosus
Euphorbia pulcherrima
Tagetes
Coleus scutellaria
Polyscias guilfoylei
Bauhinia sp.
Pseuderanthemum (x formosum)
Codiaeum variegatum
Plumeria rubra
Pedilanthus tithymaloides
Lanessaria rochburghiana
Polyscias scutellaria
Polyscias fruticosa
Hibiscus (ornamental hybrid)
Acrostichum aureum
Acalypha sp.
Zetrina pendula
Heliconia sp.
Euphorbia cotinifolia
Ficus benjamina

Hedychium sp.
Nerium sp.
Acalypha hispida
Capsicum frutescens
Gardenia jasminoides
Canna sp.
Crinum asiaticum
Zephyranthes candida
Caladium bicolor
Ipomoea quamoclit
Caesalpinia pulcherrima
Polianthes tuberosa
Lantana camara
Jatropha multifida
Zinnia elegans
Gomphrena globosa
Heliconia bihai
Acalypha amentacea var. wilkesiana
Casuarina equisetifolia
Cordyline terminalis
Malvaviscus
Graptophyllum pictum
Samanea saman
Terminalia catappa
Erythrina variegata
Acacia confusa
Bixa orellana
Cassia alata
Barringtonia asiatica
Cocos nucifera
Catalpa longissima
Cassia fistula
Xanthosoma sagittifolia
Punica granatum
Alpinia speciosa

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Jan. 27 - Com Mar Nursery, upper Tonte Valley (see p. 146) Nursery to supply planting material for Com-Nav-Marianas establishment. Plants not listed except a few not generally noticed elsewhere.

Tabebuia pentaphylla
"Kentia" palm
Euthonia divaricata
Cassia fistula
Cocos nucifera
Cocos nucifera
Roystonea oleracea

Jan. 29 - Manguerao "Guam Florist" nursery (see p. 152) and other establishments in the neighborhood. Experiment Station, homes of employees, nursery of

Veronica species supplied by owners of Guam Florist.

Begonia spp.
Lantana camara
Rhyllodendron spp.
Phoenix sylvestris ! (small)
Vanda x Miss Joaquim
Monstera deliciosa

Araucaria excelsa
Impatiens sultana
Trachycarpus excelsa ?
Chamaerops humilis ?
Strelitzia reginae
Pelargonium zonale
Gardenia jasminoides
Tabebuia pentaphylla
Dieffenbachia maculata
Vitis sp. (stenis)
Peperomia pulchella
Brassaia actinophylla
Murraya paniculata
Spathiphyllum sp.
Anthurium
Sanderiana (or Gloriosa?) angustifolia
Calathea (with sharp pink stripe)
Oxalis crantziana
Raphidophora (or Epipremnum)
Sansevieria cylindrica
Kalanchoe (var. lf.)
Kalanchoe (large singular lf. 2½" x 6")
Tawatlis (Distichona)
Aloe sp.
Thuja orientalis
Plumiera rubra — calachuchi
Alpinia purpurata
Nephrolepis cordata
Ixora coccinea
Nephrolepis biserrata v. furcans
Thevetia peruviana
Agave sisalana (but with no prickles and soft blunt points)
Melia azedarach — paraiso
Caesalpinia pulcherrima - caballero

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Melastoma
Melastoma electrum
Jasminum gesneriaeum
— sambacita
Chrysalidocarpus lutescens
Cyathea manniana
Bauhinia blakeana
(brought to Cap'n by from Hongkong, spoken of as Hong Kong as a hybrid)

Jan. 23 - Faraglan Trs and adjacent middle Talofofo River Basin.
(Cont. from p. 127)

Ravine forest type on angle areas. Level or nearly level areas of upland are generally covered by sword-grass. The sword-grass areas are more-less badly cut by erosion scars. Tree rather rare.

The Miscanthus community here is pure Miscanthus except in thin places and small openings. It has been burned or cut & sword grass stubs show. No Casuarina seen in this place and small openings may be found:

c Hyptis capitata
a Chrysopogon aciculatus
c Cenchrus echinatus
Se Mitracarpum hirtum
o Digeria alternifolia
o Sporobolus longatus
o Paspalum orbiculare

In a small cleared area of brownish-red soil, in sword grass the following weeds of secondary habitats regularly

1954 Guam

1a Chrysopogon aciculatus
1a Mitrasacme pilosa
1c Waltheria indica
1c Hyptis capitata
2c Stachytarpheta indica

The lowest part of the basin, along the river is a complex of swampy forest and reed marsh, separated from the river by a broad low natural levee. This levee is covered mainly by Hibiscus tiliaceus with occasional Areca and a few Fernandoa trees. (?) The swamp forest is a mosaic with some pure Barringtonia among the trees on hummocks separated by knee-deep water. Canopy generally complete, and wandering with fallen trees & branches covered some Hibiscus tiliaceus, almost a pure stand; some mixed

a Barringtonia racemosa
a Areca catheu
a Pandanus tectorius,
Barringtonia seedlings abundant, also Alocasia and Epiphyllum on ground
Patches of reed swamp.

On this flat low grass and occasional stretches of volcanic breccia (Facpi formation) partly covered by sword-grass, partly by sparse forest and scrub.

The flats just above the swamp have Areca groves with some Hibiscus tiliaceus and with thin undergrowth of Piper graeffeanum.

The ravines running into this all around have ravine forest largely Hibiscus tiliaceus, but with Pandanus, Cycas, Areca, Ficus prolixa, Triphasia, etc

1954 Guam

Jan. 28 - West of Yigo
Inspection with Shahnel Calvo, commissioner of Yigo, of sites for a conservation reserve of antocarpus "dugdug" forest.
A block of about 20 hectares located perhaps ½ km. west of highway along the old road - broken, rather ragged forest, about ⅓ clearing, ⅓ thick mixed secondary forest largely pandanus, and about ⅓ antocarpus some trees and 5 - 7 dm. thick. Canopy not very good. Not an ideal spot for a reserve.
Another block about 1 km. in from road (across from José White property) runs along a ridge of rocky ground (kaniyefield). It is thick secondary forest, with a strip about 100 m. wide along ~~one~~ side with many large dugdug trees. The rest is good mixed secondary woods.

This has been cut into small parcels by bulldozing roads along the sides and across. This was done about 2 months previously. The cleared strips are dominated by a dense stand of Carica papaya about 1 - 2 m. tall.

Native names are Calvo
Ipomoea pes-caprae - bualaihan
Ipomoea tiliifolia - alalek

Jan. 28 - Mt. Santa Rosa
Farm of Mr. José -
2 trees of Phoenix dactylifera
5 and 2 years old, raised from seed.
Agave americana (sisal)
Pineapple field of about 30,000 plants, smooth Cayenne, started in 1937.
Parts of field quite healthy, but some plots very poor - look as though they have iron chlorosis. plants dwarfed as well as yellowish. Darker thinks it is due to ground being too wet. Fruit not in season now but some found one for me which was excellent.

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Most of Mt Santa Rosa is covered by swordgrass mixed of it somewhat disturbed by war activity. There is some Dimeria grassland, but most of the area is Miscanthus and erosion scars.

Composition in Miscanthus area and smaller disturbed places:

a Miscanthus floridulus
la Elephantopus mollis
la Stachytarpheta indica
la Gleichenia linearis
c Hyptis capitata
c Globbidium vrayianum
c Leucaena glauca
c Emilia javanica
lc Nephrolepis biserrata
lc Polygala paniculata
lc Mitracarpum hirtum
lc Cuscuta chinensis
lc Lygodium scandens
lc Ageratum conyzoides
olc Panicum
o Dimeria chlorifloroides
l Thuarea involuta
l Cenchrus echinatus
r Ipomoea littoralis
r Pandanus tectorius
r Cheilanthes tenuifolia
Scaevola frutescens
Pennisetum polystachyon
Sida acuta
Chrysopogon aciculatus
Desmodium triflorum
Psidium guajava
Rhaphiolepis indica (in cult.)

Small areas of Dimeria seem to be not significantly different physiographically from the Miscanthus areas.

la Waltheria indica
lc Pecpalum orbiculare
lc Rhynchospora rubra
o Fimbristylis annua
o Fimbristylis sp. (sp.)
l Fimbristylis cymosa
r Wikstroemia elliptica
r Mapitella hemsleyana
r Geniostoma
r Jasminum simplicifolium

1954 Guam

Jan. 23 - road south of Pago Bay, near Yona
Small heron (sort of tea seen in various parts) found recently dead along road. Rough descriptio
about 11-12" total length
Beak about 1¼-1½ inches. Crown dark lead-gray; naked yellow patch around eye. Primaries, ~~and~~ secondaries, lead-gray and tail back dull reddish brown; Wing coverts buff-tan; under parts white washed with tan; under side of wings white feet orange yellow, claws dull pinkish.
Least bittern acc. Richards

Jan. 30 - Merizo
1 cadyancarpus excelsus
+ Livistona chinensis
planted in village.
Mangrove swamp in east part of village
Flats of Pandanus vagina
In swamp
Rhizophora + Thespesia dominant with Heritiera Hibiscus tiliaceus, Bruguiera and Clerodendrum inermis

East of Merizo the strand is lined with Thespesia, etc. Coral terrace just above high tide, with occasional low Pemphis bushes. Back of this is a little sand with a belt of Ipomoea virgineus. Back of this is a belt of Thuarea, with some Ipomoea pes-caprae, just in front of and inside edges of trees.
The flat behind this is of Rhizophora soil - swampy, with Pandanus, Leucaena, Guettarda, Musa, Pithecellobium, Cocos, under sparse coconuts a few breadfruit trees and Triphasia clumps.
Principal weeds are:
Stachytarpheta indica
Sida rhombifolia
Urena lobata
Synedrella nodiflora
Ipomoea pes-caprae
Thuarea involuta
Chrysopogon aciculatus
Paspalum conjugatum
Vernonia cinerea

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Jan. 28 further east of Merizo.

Stand of young mangroves both Rhizophora and Bruguiera in shallow water outside of fragmented coral terrace. Perhaps ½ are Bruguiera and ½ Rhizophora. Along the shore are a few Xylocarpus Sterculia, Hibiscus tiliaceus Heritiera, Avicennia, and Hernandia, with Clerodendrum inerme, Derris trifoliata, and Cassia sp.

The entire bay here is lined thus - scarcely a mangrove swamp but rather a mangrove lined shore. The mangrove trees in shallow open water are all young. At the head of the bay are larger trees forming a more typical mangrove swamp. Some ~~a~~ Acrostichum aureum here & there are some reeds. Mangroves seem to be colonizing eastward, in the shelter of the barrier reef which extends out to Orote Island. The shore here is protected

from beach erosion by a heavy sod of Pemphis a Sporobolus (stunted) which extends eastward. Enhalus acoroides very common in shallow water inside reef forming patches which seem to collect some fine sediment.

Jan. 31 - Tarague Beach

The wooded terrace above the coconut plantation covered by a somewhat degraded mixed forest of:

a Scaevola sphaeritifolia
a Cycas circinalis
c Aglaia mariannensis
c Macaranga thompsonii
c Pandanus tectorius
c Morinda citrifolia
c Premna obtusifolia
o Ficus prolixa
o Artocarpus altilis
o Guamia mariannensis
o Triphasia trifolia
o Cestrum diurnum
o Flagellaria indica
o Melanolepis multiglandulosa
v Carica papaya
o Piper guahamense
v Eugenia reinwardtiana
s Cordia subcordata
~ Ipomoea biloba

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This forest is on a shallow yellow-brown soil on a low karrenfeld. Many trees are dead or with dead tops. The canopy is perhaps 80% complete. Walking is easy through an understory 1-4 m. high chiefly Cycas, with Morinda citrifolia Guamia, Flagellaria, Pipturus, young Aglaia, etc. Vascular epiphytes are few - Polypodium punctatum, Pyrrosia lanceolata and Nephrolepis acutifolia being seen but not abundantly.

As steep slopes at foot of cliff Cordia becomes dominant to abundant, and Cynometra, Diospyros, Psychotria, Maytenus, Premna grandis, Scaphium malaspina, and Pipturus argenteus are additional species. The forest is lower, Ochrosia is no longer abundant but only occasional. The limbs of Cordia are tangled just above ground, making progress on foot locally difficult.

On the cliff above is a scrub composed of
a Bikkia marianensis
c Scaevola putescens
c Triphasia trifolia
c Phyllanthus marianus
c Ochrocarpus obovatus
c Hedyotis fruticosa
o Cestrum diurnum
o Premna grandis
o Cycas circinalis
o Psychotria mariana
o Pipturus argenteus
form bare rock shows.

Jan. 31 - Ritidian Point - trail down cliff just south of point.

The forest here is rather uneven and appears to have been somewhat disturbed. On the main terrace (2 m above sea) there has at sometime been considerable clearing. The flats just above the beach have been planted to coconuts.

The general composition on cliffs and terraces is
c Artocarpus altilis
c Glaxylon
c Guamia marianensis

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c Cyrtostachys
c Pandanus tectorius
c Cycas circinalis
c Aglaia mariannensis
c Phyllanthus taipoka
c Premna obtusifolia
c Macaranga thompsonii
c Glochidion appositifolium
c Phyllanthus mariannensis
c Tectaria crenata
2a Tristiropsis (Serianthes)
c Intsia bijuga
c Bleekeria mariannensis
c Ficus prolixa
c Guettarda speciosa
bc Pipturus argenteus
a Ficus tinctoria
acca leontopetaloides
Carica papaya
Flagellaria indica
Piper guahamense
Melochia
Laportea ecitifolia
Pisonia grandis (Boston)
Hernandia sonora
(continued)

The beach here is broad and sandy, and in front of the coconut grove lined with:
a Casuarina equisetifolia
a Messerschmidia argentea
a Scaevola frutescens
c Pandanus tectorius
c Hernandia sonora

Dangkog Fina (Ficus prolixa) - Fina (Ficus tinctoria) - Fina'gu'ahan (Ficus ?) - Fina'gu'ahan (Ficus ?) - Fina'gu'ahan (Ficus ?

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Jan. 20, 1954.

Low altitude flight in cabin plane with Tracey and Stensland to study vegetation pattern of island, crossing the island many times in different directions and across different parts, finally following the entire west and north coasts and circling several times around the loop on the northern plateau, especially studying the position of the two volcanic outcrops west of Mt. Santa Rosa.

Flat back of Tumon Bench--coconut groves and some open ground, more coconuts than show on my veg. map.
Back of small point north of Orote--more grassland than on my veg. map.
Mangrove swamp in bay is mostly Avicennia.
Strip north of Sasa is in ravine forest, mostly of Hibiscus tiliaceus.
On top of Mt. Alifan, or near top, is a patch of sword-grass.
Setti Valley bottom covered by coconut plantation.
Merizo Valley has coconuts in lower parts, ravine forest in upper parts. All of the valleys in the southern part have considerable cocogrove. There are coconut patches even in the most remote parts of the southern half of the island, also bamboo clumps but these are not as numerous. These seem to show that there were once human habitations or at least farms or cultivated patches in the remotest interior valleys and stream headwaters.
From the air reeds show a finer texture than sword-grass, which is clumpy. Dwarfs is even finer.
In some areas in the volcanic part Casuarina actually forms a forest that covers the ground as viewed from the air.
The north shoulder of Guam-Marianas Hill should be indicated on the map as relatively good limestone forest, not completely altered.

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In patch of woods at head of south branch of Pago River all large trees look dead, as though at some time there had been a fire.
Flats south of Talofofo Bay have extensive coconut plantations.
Small lakes in Bonya limestone area are surrounded by belts of reeds.
South of Orote Pen. in most of the flat valley bottoms are traces of old rice patches in the marshland. Marked by rectangular pattern. Apparently date from Japanese occupation.
In Naval Magazine area are patches of Leucaena.
On east side of Mt. Lamlam a fairly large reed marsh.
In Talofofo River Basin the coconut area extends about one third the way down from Fena Dam. Below this is swamp forest.
Slumping is evident below all erosion scars on any sort of slope in volcanic part.
In Dan Dan (Martinez Pasture) all the drainage runs east from the western scarp or series of erosion scars.
In the southeast corner of the island is much Dimeria grassland.
The terrace forests north of Talofofo to Togcha should be indicated as good limestone forest on my vegetation map. This also reaches down from the north to the north side of Pago Bay.
The plateau east of Maron has large numbers of dead trees. The forest just south of Anderson A.F.B. seems almost entirely dead. East and north of Anderson it seems in fairly good shape, quite poor west of Anderson. The only good patch in the extreme north part of the Loop is opposite the east end of Tarague Beach. Good forest north of Northwest Field east of Ritidian Point. There is good forest just west of Mataguac Hill. The grassy area on Mataguac is smaller than on my veg. map.